Beyond Heroes

Core Supplement BH8

HARDWARE

The Role Playing Game for all Genres

The Beyond Heroes Roleplaying Game Book XVIII: The Book of Hardware

Writing and Design: Marco Ferraro

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Foreword

The Beyond Heroes Role Playing Game is based on a heavily revised derivative version of the rules system from Advanced Dungeons and Dragons 2nd edition. It also makes extensive use of the optional point buying system as presented in the AD&D Player's Option Skills and Powers book. My primary goal was to make this system usable in any setting, from fantasy to pulp to superhero to science fiction.

While not complete this pdf tries to cover what equipment is available in each era. Future Equipment is covered in Book BH22 Far Future Era.

1. Equipment during the Roman Era

Adventuring Gear

Type	Cost (sestertii)	Weight (pounds)
Acid (flask)	1000	
Air Bladder	1500	1
Alchemist's Fire (flask)	2000	
Antitoxin (vial)	5000	
Arrow Flare	1000	
Arrow Message	20	
Backpack (empty)	200	2
Bed Roll	10	3
Bell	100	
Blanket, Winter	50	3
Block and Tackle	500	
Bow, Elven	15000	8
Bracers Leather	80	
Bracers Metal	10-60	1
Bucket (empty)	50	2
Cable Climbing, Waxed, per 120'	3000	10
Cable Tow, per 100'	2000	15
Caltrops	100	
Candle	1	
Canvas (sq. yd.)	10	1
Case, Map or Scroll	100	1/2 lb
Chain (10 ft.)	3000	2
Chalk, 1 piece	1	
Crampons (Ice Walking)	400	2
Crowbar	200	5
Crutches	100	4
Fire Grate	300	2
Firewood	1	varies
Fishhook	10	
Fishing Net, 25 sq. ft.	400	5
Flint and Steel	50	
Grappling Hook	80	4

Type	Cost (sestertii)	Weight
Hammer	50	2
Harp, Elven	50000-250000	5-100
Lamp, Common	10	1
Lantern, Bullseye	1200	3
Lantern, Hooded	700	2
Mess Kit	800	1
Pavilion, Camping, Small, 15' x 15', holds 10	3000	50
Pavilion, Camping, Large, 20' x 30', holds 25	10000	80
Pavilion, Travelling, 8' circle, holds 3	2000	10
Pick, Miner's	300	10
Piton, Climbing Iron	3	
Piton, Climbing Steel	20	
Piton, Climbing Silver	100	
Pouch, Belt	100	
Ram, Portable	1000	20
Rations, Trail (per day)	50	1
Repellents, Insect Candle, per dozen	300	3
Repellents, Insect skin applied, per flask, 50 uses	500	3
Rocket Signal (Whistle)	1000	
Rocket Signal (Flash)	3000	
Sledge	100	10
Spike, Iron, 6" long	5	1
Spike, Silver, 8" long	10	1
Spike, Steel, 6" long	15	1
Spike, Wooden, 12" long	2	1
Splint Set	400	1
Tent, Small, holds 2 men	100	10
Tent, Large, holds 15men	3000	20
Torch, 30' radius, 15 rounds	1	1
Vial, Ink or Potion	100	
Walking Staff Basic	30	1
Walking Staff Ash, Carved	800	2
Water / Wineskin, Small, 1 gallon	3	1
Water / Wineskin, Large, 15 gallon	30	2
Whistle, Bone	15	
Whistle, Metal	50	
Whistle, Reed	7	
Whistle, Silver	1000	
Wound Packing, per 4 oz	10	

Animals

Type	Cost (sestertii)
Ape	700
Baboon	7500
Badger	90

Type	Cost (sestertii)
Bees, per 100	600
Boar	600
Bull	2000
Calf	500
Camel	5000
Canary	2
Cat, Hunting	500,000
Chicken / Rooster	3
Chimpanzee	6000
Cow	100
Doe	500
Dog Guard	2500
Dog Hunting	1700
Donkey, Mule, or Ass	500
Dove	3
Duck	3
Eagle	2500
Elephant	25,000
Falcon, trained	60,000-120,000
Ferret	50
Goat	100
Goose	5
Guinea Hen	2
Hawk, Trained	10,000
Horse Draft	20,000
Horse Heavy War	40,000
Horse Light War	15,000
Horse Medium War	22,500
Horse Riding	7500
Lama	3000
Monkey	200
Nightingale	250
Owl	150
Ox	700
Partridge	50
Pheasant	30
Pigeon	2
Pigeon, Homing	10,000
Pig	300
Piglet	100
Pony	3000
Quail	20
Ram	300
Sheep	200
Snake	5

Type	Cost (sestertii)
Song Bird	2
Stag	900
Swan	2500
Yak	900
Human Slave	2000+

Donkey or Mule: The best pack animal around, a donkey or mule is stolid in the face of danger, hardy, sure-footed, and capable of carrying heavy loads over vast distances. Unlike horses, they're willing (though not eager) to enter dungeons and other strange or threatening places.

Animal Equipment

Type	Cost (sestertii)	Weight
Bit & Bridle	150	3
Cart Harness	200	10
Cat House	100	
Dog House	400	
Dog Sled	3000	
Halter	5	
Harness	300	10
Harness and Feeding Bag	500	5
Hobbles, 1 set 200	5	
Horse Blanket / Hood	200	6
Horseshoes, set	100	10
Saddle, Exotic Military	6000	40
Saddle Military	2000	30
Saddle, Pack	500	15
Saddle, Riding	1000	35
Saddle, War Horse	2000	40
Saddle Bags Large	300	8
Saddle Bags Small	400	5
Saddle Blanket	30	4
Saddle Pack	300	25
Yoke Horse	500	15
Yoke Oxen	300	20

Saddle, Exotic: An exotic saddle is like a normal saddle of the same type except that it is designed for an unusual mount, such as a pegasus. Exotic saddles come in military, pack, and riding styles.

Saddle, Military: A military saddle braces the rider, adding a +2 circumstance bonus to Ride checks related to staying in the saddle. If a character is knocked unconscious while in a military saddle, he or she has a 75% chance to stay in the saddle (compared to 50% for a riding saddle).

Saddle, Pack: A pack saddle holds gear and supplies, not a rider. A pack saddle holds as much gear as the mount can carry.

Saddle, Riding: The standard riding saddle supports a rider.

Sled: This is a wagon on runners for moving through snow and over ice. In general, two horses (or other beasts of burden) draw it. It comes with the harness needed to pull it.

Armour

The cost reflects how much an item is worth in the Roman Empire, which is why rare and exotic armour costs much more.

Western Armour Types	HPs	AC	Weight	Cost (sestertii)
Banded Mail	50	4	35	4500
Barding Medium Creature	Varies	Varies	x1	x2
Barding Large Creature	Varies	Varies	x2	x4
Brigandine	75	6	35	5000
Bronze Plate Mail	100	4	45	7000
Chain Mail	44	5	40	5500
Field Plate	120	2	60	9000
Full Plate	150	1	70	10,000
Hide	50	6	30	3000
Leather	30	8	15	1000
Padded	15	8	10	500
Plate Mail	160	3	50	8000
Ring Mail	40	7	30	2500
Scale Mail	75	6	40	4000
Splint Mail	82	4	40	6000
Studded Leather	38	7	25	2000

Eastern Armour Types	HPs	AC	Weight	Cost (sestertii)
Lamellar, Cuirass	20	8	8	1000
Lamellar, Leather	40	6	25	4000
Do-Maru	50	5	30	5000
Kikko	60	5	25	4500
Lamellar, Horn	75	5	30	5500
Four Mirror	100	4	45	7000
Lamellar, Steel	90	4	35	6000
Mountain Pattern	100	4	40	6500
Kusari Gusoku	110	3	45	7500
Lamellar, Iron	120	3	50	8000
Lamellar, Stone	150	2	45	9500
Tatami-do	130	3	45	85000
O-yoroi	140	2	45	9000

Gauntlet Types	HPs	AC	Weight	Cost (sestertii)
Gauntlet, Chain	10	8	11.25	500
Gauntlet, Plate	15	7	11.25	1500
Gauntlet, Leather	5	9	9	200

Helm Types	HPs	AC	Weight	Cost (sestertii)
Helmet, Arme t	25	6	3	2000
Helmet, Barbut	18	7	3	1000
Helmet, Burgonet	20	7	3	2500
Helmet, Close	30	7	3	2200
Helmet, Galea	25	6	3	1000
Helmet, Great	35	5	4.5	3000
Helmet, Morion	10	8	3	1200
Helmet, Myrrmillo	5	9	3	1000
Helmet, Pikeman	12	8	3	800
Helmet, Sallet	20	7	3	1500

Shield Types	HPs	AC	Weight	Cost (sestertii)
Buckler	10	+3	5	1500
Shield, Large Bronze	25	+4	10	1200
Shield, Large Steel	30	+5	15	2000
Shield, Large Wooden	20	+3	10	700
Shield, Small Bronze	13	+1	5	600
Shield, Small Steel	25	+2	6	900
Shield, Small Wooden	15	+3	5	300
Shield, Tower	35	+5	45	3000

Banded Mail: This armour is made of overlapping strips of metal sewn to a backing of leather and chain mail. The strips cover vulnerable areas, while the chain and leather protect the joints and provide freedom of movement. Straps and buckles distribute the weight evenly. It includes gauntlets.

Barding, Medium-Size Creature and Large Creature: Barding is simply some type of armour covering the head, neck, chest, body, and possibly legs of a horse. Heavier types provide better protection at the expense of lower speed. As with any non humanoid Large creature, a horse's armour costs four times what a human's (a humanoid Medium-size creature's) armour costs and also weighs twice as much as normal armour. (If the barding is for a pony, which is Medium-size, the cost is only double, and the weight is the same.)

A mount wearing heavy armour moves at only triple normal rate when running instead of quadruple. Flying mounts can't fly in medium or heavy barding. Barded animals require special attention. Care must be taken to prevent chafing and sores caused by the armour. The armour must be removed at night and ideally should not be put on the mount except to prepare for a battle. Removing and fitting barding takes five times as long. Barded animals cannot be used to carry any load other than the rider and normal saddlebags.

Because of this, a mounted warrior often leads a second mount for carrying gear and supplies.

Brigandine: This armour is made from small metal plates sewn or riveted to a layer of canvas or leather and protected by an outer layer of cloth. It is rather stiff and does not provide adequate protection to the joints where the metal plates must be spaced widely or left off.

Bronze Plate Mail: The softest of the true plate mail armours, bronze plate mail is made of heavy metal plates attached to a layer of brigandine or composite layers of metal scales and leather or padded armour.

Historically by the time the armourer's craft had advanced to the point that plate mail had become common, steel had replaced bronze as the best metal for constructing armour. Thus, aside from ceremonial armour, most bronze plate mail appears in areas where copper and tin are plentiful and iron is rare. In general, since bronze plate mail is designed to be lighter and more flexible than normal plate mail, bronze plate armourers use leather and padding under the bronze plates instead of the heavier chain mail.

Also to reduce the overall weight of the armour there are no bronze plates attached to the moveable joints. A large bronze breastplate and greaves are often the only difference between bronze plate mail and bronze scale or brigandine armour. Bronze plate offers better protection than normal brigandine or chain mail and a lower price tag than standard plate mail. Since bronze plate is usually backed with stiff layered armour rather than loose chain mail, bronze plate mail isn't as flexible as banded, splint, or plate mail.

Buckler: This small metal shield is strapped to the forearm, allowing it to be worn and still use the hand. A bow or crossbow can be used without penalty. An off-hand weapon can be used, but a -1 penalty on attack rolls is imposed because of the extra weight on your arm. This penalty stacks with those for fighting with the off hand and, if appropriate, for fighting with two weapons. In any case, if a weapon is used in the off-hand, the character doesn't get the buckler's AC bonus for the rest of the round.

Chain Mail: This armour is made of interlocking metal rings. It includes a layer of quilted fabric underneath it to prevent chafing and to cushion the impact of blows. Several layers of mail are hung over vital areas. Most of the armour's weight hangs from the shoulders, making chain mail uncomfortable to wear for long periods of time. It includes gauntlets.

Do-Maru: The lightest of all samurai armours, do-maru wraps around your body like a short armoured coat. It consists primarily of lamellar and lacks a solid breastplate or sleeves. This permits you greater flexibility than do heavier armours.

Field Plate Armour: This is the most common version of full plate armour, consisting of shaped and fitted metal plates riveted and interlocked to cover the entire body. It includes gauntlets, boots, and a visored helmet. A thick layer of padding must be worn underneath. However the weight of the suit is well distributed over the whole body. Such armour

hampers movement only slightly. Aside from its expense the main disadvantages are the lack of ventilation and the time required to put it on and take it off. Each suit of field plate must be individually fitted to its owner by a master armourer, although captured pieces can be resized to fit the new owner (unless such is patently absurd such as a human trying to resize a Halfling's armour).

Four Mirror: This armour consists of four plates harnessed together with leather shoulder straps. Two round plates protect your front and back, while two smaller rectangular plates cover the sides of the torso. Four-mirror armour is worn over chainmail to provide added protection, and comes with a spiked helmet with a chainmail hood.

Full Plate: This is the impressive, high Gothic-style armour of the Late Middle Ages and Renaissance. It is perfectly forged and fitted. All the plates are interlocking and carefully angled to deflect blows. The surfaces are normally highly ornamented with etching and inlaid metals. Each suit must be carefully custom-fitted to the owner and there is only a 20% chance that a captured suit can be refitted to a new owner of approximately the same size. The metal plates are backed by padding and chain mail. The weight is well distributed. The armour is hot, slow to don and extremely expensive. Due to these factors it tends to be used more for parades and triumphs than actual combat.

Gauntlets: Gauntlets are long gloves that extend over the wrist and up to the lower third of the forearm, whose descendants can be found protecting the hands of industrial workers and recreational falconers. Chain mail gauntlets take the form of mittens, extending to the wrist and being made of a large bag for the fingers and a smaller one for the thumb. A leather thong usually attaches them to their parent mail sleeves, so that the wearer can use his hands unencumbered without losing them, and usually the gauntlets extend as far as the wrist.

Leather gauntlets are similar to those worn by falconers, being made of thick, soft leather. They may be made in mitten or glove form, and extend the full length of a normal gauntlet. Plate mail gauntlets add metal plating over the back of the hand and the tops of the fingers over the top of a leather gauntlet. Full plate gauntlets use laminated plating on the fingers, giving better protection to the joints, and chain mail or leather on the palm of the glove. Both types of plate gauntlet have a conical piece of metal to protect the wrist, thus shaped in order to deflect sword blows.

Haramaki: Also called a belly-warmer, a haramaki is a simple silken sash lined with chainmail or articulated metal plates and tied about the stomach to protect it.

Helmet, Armet: This helmet design was first seen in the latter years of the 15th Century. It is made from a skull piece and a long, thin vertical ridge at the rear to help protect the neck. At either side hinged pieces are strapped closed over the mouth to protect the cheeks and to protect this join a visor, hinged at either side and metal wrapper are strapped on as well buckling at the back. A metal rondel in turn protects this buckle.

Helmet, Barbut: This design of helmet was first used by the ancient Greeks who cast it in bronze. It is a conical ended cylinder like a modern artillery shell and covers the entire head with a single piece, leaving a vertical slit for the nose and mouth and a horizontal one for the eyes, forming a T. The Greeks developed the horizontal bars of this T into circular or oval cutouts. In the early 15th Century this design underwent something of a renaissance and until the end of that century saw widespread use in Europe. As the style developed the eyeholes grew smaller and more shaped to the eyes themselves.

Helmet, Burgonet: This was an open faced helmet introduced in the first half of the 16th Century. They were similar in design to the close helmet sharing the comb but they often featured a peak. The otherwise exposed face is protected by metal bars. A falling buffe when fitted converts it to a closed type.

Helmet, Close: The close helmet is similar to the armet and was widely used in the 16th Century. An all enclosing metal helmet, it lacks the hinged cheek pieces of the armet but has a hinged falling visor instead. A gorget plate attached to the rim overlaps on to the gorget of the breastplate giving excellent neck protection. Initially this type had a very low, conservative comb or crest but as the century went on it became larger. After a while this trend was reversed and the comb became smaller again along with the visor which became less prominent.

Helmet, Galea: This helmet was worn by Roman gladiators specifically the Samnite and Thracian gladiators. It is a metal helmet with a narrow brim all the way round similar to a morion and a face plate whose bottom half is simple curved plate and whose upper half is perforated with holes for vision and ventilation.

Helmet, Great Helm: This is a cumbersome, heavy helmet and its design dates back to the early Middle Ages. It preceded the bascinet and was the ultimate development of the small helmets of the Dark Ages. It did however give considerable protection and so lasted in tournaments and jousts long after its successors began to dominate on the battlefield. It rested its considerable weight on the shoulders, and was basically a thick, heavy metal cylinder closed at the top with eye slits. Later models introduced ventilation holes, reinforcing bars to protect nose and eyes and tapered the top somewhat but the basic design went unchanged.

Helmet, Morion: This helmet emerged in the middle of the 16th Century. By the second half of that same century it had become the usual headwear of a foot soldier and was the helmet worn by the Spanish conquistadors who landed in the New World. It is an open helmet, a dome elongated from front to back with a curved brim and central comb. Spanish morions had no comb and a plain skull instead but Italian designs had large combs on top. Another variation (also used by the Italians) was the peaked morion in which the brim was swept up into peaks at front and back.

Helmet, Myrrmillo: This stylised Roman gladiatorial helmet was a simple skull piece with cheek flaps closely resembling the legionary's helmet. It had a customised comb made to resemble a fish.

Helmet, Pikeman's: The Pikeman's Pot was worn by pikemen to complete their plate armour. It was a rounded skull piece cast in two separate halves and joined at a central comb. A wide brim was tilted up at front and back, a drooped down at each side to offer rudimentary ear protection but ear protectors, simple plates that strapped together under the chin provided this far better.

Helmet, Sallet: The sallet was the replacement for the barbut introduced in the second half of the 15th Century. Early models fitted closer to the neck and were more rounded than the barbut but were otherwise similar. Later sallets varied a great deal but the basic design featured a rounded skull piece with a tapered rear that formed a neck guard. This guard could be solid or made of laminated plates. Simple sallets had their rear sections riveted to the skull piece; it was pointed at the back and formed a flange around the sides and front of the helmet, covering the wearer's face to the upper lip. An eye slit was included. Other versions had hinged rear sections but hinged visors were more common. Visor less models had a bevor or mail sheet to protect the lower face. The Germans favoured the more rounded rear neck model but the Italians designed their sallets on lines closer to the original barbut.

Hide: This is armour prepared from the extremely thick hide of a creature (such as an elephant) or from multiple layers of regular leather. It is stiff and hard to move in.

Kikko: Kikko armour consists of hexagonal plates made from iron and sewn to cloth. The plates may be hidden by a layer of cloth or left exposed.

Kusari Gusoku: Kusari gusoku is similar to tatami-do armour; however, a katabira—a type of chain jacket—is worn in place of the chest armour.

Lamellar Armour: Lamellar is a type of armour in which small plates of various types of materials are strung together in parallel rows using fine cord. Lamellar plates can be constructed from lacquered leather, horn, or even stone, though steel and heavier iron are most common. Lamellar armour can be crafted into various shapes, including partial pieces such as breastplates, greaves, or even entire coats. The properties of specific suits and pieces of lamellar armour are determined by their material.

Lamellar Cuirass: This armour consists of a light breastplate and shoulder guards made from lacquered leather plates bound together and fitted over a silk shirt.

Large Shield: A large shield is too heavy to use the shield hand for anything else.

Leather: This armour is made of leather hardened in boiling oil and then shaped into breastplate and shoulder protectors. The remainder of the suit is fashioned from more flexible, somewhat softer materials.

Mountain Pattern: This medium armour consists of hundreds of small, interlocking pieces of steel shaped to resemble an ancient symbol for the word "mountain." The mail is then

riveted to a cloth or leather backing. It is worn like a mail coat and covers your torso, shoulders, and thighs.

O-Yoroi: Worn almost exclusively by high-ranking samurai, o-yoroi—or "great armour"—is a heavy combat armour that consists of various supplementary components that include both plate and lamellar elements. Each suit is crafted for a specific individual and displays the owner's aesthetic. Upon completion, the suit is collared and sealed with a final lacquer finish. The centrepiece of o-yoroi is a cuirass consisting of two parts—a separate reinforcement for the right side called a waidate, and a kikko cuirass.

The upper part of the waidate consists of a leather-covered iron plate. The cuirass's leather shoulder straps—called watagami—are likewise armoured with metal plates. Affixed to the cuirass are a number of supplementary pieces, including wide lamellar shoulder guards, a kikko sleeve for the shield arm, lacquered iron greaves worn over padded silk leggings, and a groin protector. Still, the signature component of each suit of armour is the tiered kabuto helmet and its accompanying ho-ate mask. Ho-ate masks can be made of hardened leather or metal and are fashioned into fearsome visages such as oni, dragons, or other mythical beings.

Padded: This is the simplest type of armour, fashioned from quilted layers of cloth and batting. It tends to get hot and after a time becomes foul with sweat, grime, lice, and fleas.

Plate Mail: This armour consists of shaped and fitted metal plates riveted and interlocked to cover the entire body. It includes gauntlets, heavy leather boots, and a visored helmet. Buckles and straps distribute the weight over the body, so full plate hampers movement less than splint mail even though splint is lighter. Each suit of full plate must be individually fitted to its owner by a master armour smith, although a captured suit can be resized to fit a new owner at a cost of 200 to 800 (2D4 x100) sestertii. This is the most common form of heavy armour.

Ring Mail: This armour is an early (and less effective) form of chain mail in which metal rings are sewn directly to a leather backing instead of being interlaced. (Historians still debate whether this armour ever existed.)

Scale Mail: This is a coat and leggings (and perhaps a separate skirt) of leather covered with overlapping pieces of metal, much like the scales of a fish. It includes gauntlets. Small Shield: A small shield's light weight lets a character carry other items in that hand (although the character cannot use weapons).

Splint Mail: This armour is made of narrow vertical strips of metal riveted to a backing of leather that is worn over cloth padding. Flexible chain mail protects the joints. It includes gauntlets.

Studded Leather: This armour is made from tough but flexible leather (not hardened leather as with normal leather armour) reinforced with close-set metal rivets.

Tatami-Do: Worn by samurai as a lighter-weight alternative to o-yoroi, tatami-do is a full-body field armour that combines both metal lamellar and kikko components into a suit of mail with a cloth backing. It typically includes a collapsible kabuto helmet or an armoured hood, as well as arm, shoulder, and thigh guards.

Tower Shield: This massive wooden shield is nearly as tall as the wielder. Basically, it is a portable wall meant to provide cover. It can provide up to total cover, depending on how far a character comes out from behind it. A tower shield however does not provide cover against targeted spells; a spellcaster can cast a spell on a character by targeting the shield. A tower shield cannot be used for the shield bash action.

Wooden or Steel Shields: Wooden and steel shields offer the same basic protection, though they respond differently to special attacks (such as warp wood and heat metal). When running in heavy armour, a character moves only triple speed, not quadruple.

Bard's Equipment

Type	Cost (sestertii)	Weight (pounds)
Bagpipes	8000	8
Chime family Bells	2500	3
Chime family Cymbals	2000	4
Chime family Chimes	3000	5
Chime family Gong	2000	35
Chime family Tam-tam	2000	35
Chime family Triangle	500	1
Clappers Bones	100	1
Clappers Castanets	200	1
Clappers Claves	100	1
Clarinet/Oboe	3500	2
Cymbal	5500	14
Drums Bongos	600	3
Drums Cylinder	2000	45
Drums Gong	3500	40
Drums Tom-tom	3000	30
Fiddle	3000	4
Flute Cornett	1000	1
Flute Recorder	1000	1
Harmonica	500	
Harp	1200	6
Horn/Trumpet Heralding	3500	4
Horn/Trumpet Slide	8000	5
Keyboard Harpsicord	30,000	90
Lute	3500	4
Lyra	5500	6
Mandoline	4000	5
Tambourine	500	2
Trombone	7000	8

Type	Cost (sestertii)	Weight (pounds)
Violin	6500	4
Xylophone	8000	25

Cloth

Type	Cost (sestertii)	Weight (lbs)
Bandages 100, 10" squares	20	3
Bandages 2" wide, 50 yard roll	100	5
Blanket , Single Wool	500	3
Blanket , Single Flannel	200	4
Blanket, Double Wool	260	3
Blanket, Double Flannel	150	5
Carpet, per sq yard	10-100	2
Canvas, per sq yard	40	1
Comforter, Linen Down	700	6
Comforter, Linen Flannel	400	6
Comforter, Linen Rag	200	6
Comforter, Linen Wool	500	6
Cotton, per sq. yard	10	1
Curtains / Drapes, sq yard	10-40	3
Cushion	10-30	1
Linen, per sq. yard	5	2
Pillow, Feather	100-200	1
Quilt	1000-2000	4
Satin, per sq. yard	400	1
Silk, per sq. yard	700	1
Tourniquet	10	
Towels	20	1
Velvet, per sq. yard	400	1
Wool, per sq. yard	8	2

Clothing

Type	Cost (sestertii)	Weight (pounds)
Apron	1	1
Armband, pair	3500	3
Artisan's Outfit	100	4
Baldric, Belt Sash	80	
Belt Plain	30	1
Belt Fancy	100+	2
Belt Sword and Dagger	150	5
Blouse	10	
Boots High (hard)	200	3
Boots High (soft)	100	3
Boots Low (hard)	100	1
Boots Low (soft)	80	1
Bracelets Gold	2500	

Type	Cost (sestertii)	Weight (pounds)
Bracelets Silver	1000	
Breeches Linen	100	1
Breeches Silk	800	1
Brooches Gold	4500	
Brooches Silver	2500	
Cap Fancy	50+	1
Cap Plain	10	1
Capes Half	40	1
Capes Full	70	1
Cleric's Vestments	500	6
Cloak Fancy w/Fur	250	4
Cloak Plain	50	2
Cowl	200	1
Cuff Gold	3500	
Cuff Silver	2000	
Dress, Linen	20	6
Earrings	3500	
Fan	100	
Girdle	20	1
Gloves Leather	50-1000	1
Gloves Silk	1500	1
Gown, Silk	1500	8
Handkerchief, Silk	20	
Hat Cloth	70	1
Hat Fur	200	2
Hat Straw	2	1
Headbands, Men's	2500	
Headbands, Women's	4000	
Hoods	20	1
Jester Clothing	2400	5
Kimono, Silk	70	1
Knickers	80	1
Locket	2500	
Loincloth	2	
Mittens	300	1
Money Belt	400	1
Mufflers	10	1
Nightshirt	600	2
Pendants	4500	
Pin	600	
Purses	30	1
Ring	3500	
Robe Cloth	6000	2
Robe Silk	950	2
Sandals	200	1

Type	Cost (sestertii)	Weight (pounds)
Sash	10	
Scarf	10	1
Sheath, Knife	100	1
Shirt Linen	80	
Shirt Silk	200	
Shoes Baby, pair	70	1
Shoes Dancing, pair	150	1
Shoes, normal	120	1
Surcoat	60	2
Suspenders	30	
Sword Scabbard	600	
Toga	8+	2
Trousers or Skirt	30+	1
Vest with Pockets	50+	1
Veil, Silk	10	

Some Outfits

Artisan's Outfit: A shirt with buttons, a skirt or pants with a drawstring, shoes, and perhaps a cap or hat. This outfit may include a belt or a leather or cloth apron for carrying tools.

Cleric's Vestments: Ecclesiastical clothes for performing priestly functions, not for adventuring.

Cold Weather Outfit: A wool coat, linen shirt, wool cap, heavy cloak, thick pants or skirt, and boots. When wearing a cold weather outfit, add a +5 circumstance bonus to Fortitude saving throws against exposure to cold weather.

Courtier's Outfit: Fancy, tailored clothes in whatever fashion happens to be the current style in the courts of the nobles. Anyone trying to influence nobles or courtiers while wearing street dress will have a hard time of it. Without jewellery (costing perhaps an additional 50 sestertii), the character will look like an out-of-place commoner.

Entertainer's Outfit: A set of flashy, perhaps even gaudy, clothes for entertaining. While the outfit looks whimsical, its practical design lets a character tumble, dance, walk a tightrope, or just run (if the audience turns ugly).

Explorer's Outfit: This is a full set of clothes for someone who never knows what to expect. It includes sturdy boots, leather breeches or a skirt, a belt, a shirt (perhaps with a vest or jacket), gloves, and a cloak. Rather than a leather skirt, a leather overtunic may be worn instead over a cloth skirt. The clothes have plenty of pockets (especially the cloak). The outfit also includes any extra items a character might need, such as a scarf or a wide-brimmed hat.

Monk's Outfit: This simple outfit includes sandals, loose breeches, and a loose shirt, and is all bound together with sashes. Though it looks casual, the outfit is designed to give a character maximum mobility, and it's made of high-quality fabric. A monk can hide small weapons in pockets hidden in the folds, and the sashes are strong enough to serve as short ropes. Depending on the monk's style, the outfit may be decorated with designs that indicate lineage or philosophical outlook.

Noble's Outfit: This set of clothes is designed specifically to be expensive and to show it. Precious metals and gems are worked into the clothing. To fit into the noble crowd, every would-be noble also needs a signet ring (see Adventuring Gear above) and jewellery (worth at least 100 sestertii, or at least appearing to be worth that much). And it would be advisable to not show up to a ball in the same noble's outfit twice.

Peasant's Outfit: A loose shirt and baggy breeches, or a loose shirt and skirt or overdress. Cloth wrappings are used for shoes.

Royal Outfit: This is just the clothes, not the royal sceptre, crown, ring, and other accoutrements. Royal clothes are ostentatious, with gems, gold, silk, and fur in abundance.

Scholar's Outfit: A robe, a belt, a cap, soft shoes, and possibly a cloak.

Traveller's Outfit: Boots, a wool skirt or breeches, a sturdy belt, a shirt (perhaps with a vest or jacket), and an ample cloak with a hood.

Constructions

Item	Cost (sestertii)
Arrow Slit	300
Arrow Slit, Crossletted	500
Barbican	400,000
Bartizan, 10'd, 20'h	30,000
Batter, Plith or Splay	5000
Battlement, 14'l	2000
Building, Stone	50,000
Building, Wood	20,000
Buttress, Stone, 3'w 5'd 10'h	1500
Catwalk, Wooden, 10'l	1000
Ditch, 100'l 10'd 20'w	10,000
Door, Iron, 4'w 7'h	10,000
Door, Secret, 2'w 4'h	5000
Door, Trap, 2'w 3'l	200
Door, Wooden, 4'w 7'h	1000
Door, Wooden, Reinforced, 4'w 7'h	2500
Drawbridge, 10'w 15'l	40,000
Embrasure Shutters	300
Gatehouse, Stone	200,000

Item	Cost (sestertii)
Hoardings, Stone	1000
Machicolation, Stone 10'l	10,000
Merlon, 4'w 3'd 5'h	600
Merlon, pierced with arrow slits, 4'w 3'd 5'h	1000
Moat, 100'l, 10'd 10'w	25,000
Murder Hole	1000
Palisade, Wooden, 100'l 10'h	10,000
Parapet, Stone, 10'l	1000
Pilaster, 5'w 3'd 10'h	2500
Pit, 5'w 3'd 10'h	400
Portculis, 10'w 10'h	50,000
Rampart, Earth, 100'l 10'h	10,000
Stairs, Stone, 10' rise 3'w	5000
Stairs, Wooden, 10'rise 3'w	1000
Tower, Round, 20'd 30'h	85,000
Tower, Round, 30'd 30'h	135,000
Tower, Round, 40'd 30'h	160,000
Tower, Square, 10'sq 30'h	60,000
Tower, Square, 20'sq 30'h	90,000
Tower, Square, 30'sq 30'h	120,000
Tunnel, Underground, 5'w 8'h 10'l	10,000
Wall, Bastion, 5'w 20'h 10'l	50,000
Wall, Curtain, 10'w 20'h 40'l	100,000
Window, Shuttered, 2'w 4'h	700
Window, Shuttered and Barred, 2'w 4'h	1000

Buildings

Item	Cost (sestertii)
Simple House	100,000
This one- to three-room house is made of wood and has a thatched roof.	
Grand House	500,000
This four- to ten-room room grand house is made of wood and has a thatched roof.	
Mansion	1,000,0000
This ten- to twenty-room mansion has two to three levels and is made of wood and brick. It has a slate roof.	
Tower	5,000,000
This round or square, three-level tower is made of stone.	
Keep	15,000,000
This fortified stone building has fifteen to twenty-five rooms.	
Castle	50,000,000
The castle is a keep surrounded by a 15-foot stone wall with four towers. The wall is 10 feet thick.	
Huge Castle	100,000,000

A particularly large keep with numerous associated buildings (stables, forge, granaries, etc.) and an elaborate 20-foot-high wall creating bailey and courtyard areas. The wall has six towers and is 10 feet thick.

Moat with Bridge 5,000,000

This moat is 15 feet deep and 30 feet wide. The bridge across it may be a wooden drawbridge or a permanent stone structure.

Foodstuff / Herbs

Type	Cost (sestertii)
Almonds, per lb	300
Ambrosia (Fruit Salad) per lb	50
Anchovies, per 20	100
Ants, Chocolate covered, per oz	100
Apples, per lb	100
Applebutter, per pint	50
Apricots, per lb	1500
Artichokes, Ground, per lb	20,000
Asparagus, per oz	10
Avocado, per lb	500
Barley, per lbs	100
Bananas, per lbs	200
Beans, Dried, per lb	10
Beetroot Relish, per pt	50
Birdseed, per lb.	10
Beef, per lb Corned	300
Beef, per lb Dried	500
Beef, per lb Jerked	700
Beef, per lb Sausage	200
Beef, per lb Smoked	400
Berries All Spice, per oz	100
Berries Blackberies, per oz	20
Berries Blueberries,per oz	40
Berries Boysenberry, per oz	50
Berries Cranberries, per oz	30
Berries Elderberries, per oz	10
Berries Huckleberries, per oz	10
Berries Strawberries, per oz	40
Brandied Fruits, per Pint - Cherries	200
Brandied Fruits, per Pint - Grapes	500
Brandied Fruits, per Pint - Mixed Fruits	100
Brandied Fruits, per Pint - Raspberries	300
Brandied Fruits, per Pint - Spiced Pears	400
Brandied Fruits, per Pint - Spiced Plums	300
Brandied Fruits, per Pint - Strawberries	200
Bread, per Loaf - Corn	3
Bread, per Loaf -Ginger	100

Type	Cost (sestertii)
Bread, per Loaf - Hard Tack	10 per dozen
Bread, per Loaf - Rye	6
Bread, per Loaf - Sour dough	7
Bread, per Loaf - Wheat	5
Breadfruit, per lb.	10
Broccoli, per lb	8
Buckwheat, Corn, per lb	50
Buckwheat, Flour, per lb	100
Buffalo, per lb Dried	3000
Buffalo, per lb Jerked	4200
Butter, per lbs	20
Buttered Mushrooms, per Bowl	1
Butternuts, per lb	20000
Butters, per Pint Apple	50
Butters, per Pint Blackberry	70
Butters, per Pint Pear	60
Butters, per Pint Quince	60
Butters, per Pint Rhubarb	30
Butters, per Pint Spiced Cranapple	60
Cabbage, per Head	1
Cactus fruit, per oz	2
Candied Fruits and Herbs, per oz Apricots	500
Candied Fruits and Herbs, per oz Carrots	50
Candied Fruits and Herbs, per oz Cherries	50
Candied Fruits and Herbs, per oz Honeyed Ginger	5000
Candied Fruits and Herbs, per oz Mint	70
Candied Fruits and Herbs, per oz Orange Peel	500
Carrots, per oz	100
Cashews	2000
Catfish, per lb.	400
Cauliflower, per Head	10
Caviar, 1oz	60
Cheese, per lbs	40
Cheese, Bytopian, per lb	100
Cheese, Ceddar Wheel, 1 lb	40
Cheese, Ceddar Whey, 100lb	3500
Cheese, Death, from Catoblepas, per lb	1000
Cheese, Edam, per lb	100
Cheese, Krigalan Black (Beastlands), per lb.	80
Cheese, Nut Wheel, 1lb	100
Cheese, Nut Whey, 100lb	5000
Cheese, Pepper Wheel, 1 lb	50
Cheese, Pepper Whey, 100lb	4500
Cheese, Tiefling Delight, per lb	200
Cheese, Warrior (Baatorian), per lb	200

Type	Cost (sestertii)
Cherries, per oz	50
Chestnuts, per lb	100
Chick Peas, per lb	300
Chilis Whole, per lb	10000
Chilis Ground, oz	2000
Chipmunk	1
Cobbler, per serving Cherry	200
Cobbler, per serving Apple	40
Cobbler, per serving Apricot	50
Cobbler, per serving Peach	50
Cocoa, per lb	10,000
Coconut Dried, per lb	5000
Coconut Fresh, each	1000
Cod, per lb Salted	500
Cod, per lb Smoked	700
Coffee, per lb	5000
Corn, per Sack	40
Crabapple, per lb	1000
Crackers, per dozen	1
Crab, per lbs	3000
Crustacea Jumbo Shrimp, per dozen, live	20
Crustacea Whole Crab or Lobster (live)	30
Crustacea Crayfish, live	40
Crustacea Giant Crab Leg	100
Crustacea Giant Crab or Lobster	500
Crystallized, per oz Rose Petals	1000
Crystallized, per oz Grapes	500
Crystallized, per oz Violets	1500
Crystallized, per oz Holly Leaves	2000
Custard, per Bowl	20
Dates, per oz	500
Dry Rations, 1 week	1000
Eggs, per 100	80
Eggs, per 24	20
Egg Chicken	3
Egg Duck	110
Egg Snake	500
Egg Turtle	700
Egg Roc	100,000
Egg Ostrich	5000
Egoolant, per lb	30
Figs, 1lbs	30
Fish Fillet	10
Flounder, per Fillet	300
Flour, 10lbs Sack Wheat	3

Type	Cost (sestertii)
Flour, 10lbs Sack Corn	3
Flour, 10lbs Sack Barley	5
Flour, 10lbs Sack Rye	4
Fruit Cheeses, per Pint Apple	10
Fruit Cheeses, per Pint Blackberry	100
Fruit Cheeses, per Pint Damson Plum	50
Gooseberry	60
Gopher	2
Grain, 50 lbs Barrel	500
Grapes, per lbs	600
Grapefruits, per lb	1200
Green Beans, per oz	20
Green Peas, per lb	200
Haggis	500
Hazelnuts, per lb	500
Hedgehog	5
Herring, per lb Pickled	300
Herring, per lb Salted	500
Honey, per Pint Rose Petal	50
Honey, per Pint Parsley	30
Honey, per Pint Lavender	100
Jam, per Pint Apricot and Almond	2000
Jam, per Pint Elderberry	70
Jam, per Pint Gooseberry	100
Jam, per pint Rose Petal	100
Jam, per Pint Strawberry	30
Jellies, per Pint Basil	50
Jellies, per Pint Crabapple	30
Jellies, per Pint Lemon	500
Jellies, per Pint Mint	20
Jellies, per Pint Rosemary	50
Jellies, per Pint Sage	40
Jellies, per Pint Wine	100
Juice, per Pint Apple	1
Juice, per Pint Grape	2
Juice, per Pint Orange	1
Juice, per Pint Tomato	3
Lard, Pint	50
Lemon, per lb	1600
Lentils, per lb	300
Lime, per lb	800
Lobster Tail, Meal	20
Mango, per lb	900
Maple Sugar, per lb	7500
Marmalades, per Pint Ginger	2000

Type	Cost (sestertii)
Marmalades, per Pint Orange	1500
Meat, Fresh, per lbs	100
Milk, per Pint Cow	50
Milk, per Pint Goat	70
Milk, per Pint Mare	150
Milk, per Pint Whale	1000
Millet, per lb	70
Miniature Giant Space Hamster	100
Molasses, per pt	50
Mole	10
Muffins, per dozen	50
Mullusks Abalone	500
Mullusks Clams or Oysters, per 6	30
Mullusks Large Snails, per 6	50
Mullusks Scallops, per 6	10
Mullusks Whole Squid	100
Mushrooms, per oz	500
Noodles, per lb	1500
Nuts, Ground, per lb	3000
Oats, per lb	70
Oil, per Gallon Olive	500
Oil, per Gallon Almond	1000
Oil, per Gallon Walnut	200
Oil, per Gallon Hazelnut	300
Oil, per Gallon Sesame	1000
Oil, per Gallon Sunflower	30
Olives, per lb	300
Onion, per oz	100
Oranges, per lb	1500
Peas, per oz.	5
Peaches, per lb	1500
Pears, per lb	500
Pearbutter, per Pint	60
Pecans, per lb	15000
Pepper Nuts, per lb	200
Persimmons, per lb	30
Pickles, per qt Beets	40
Pickles, per qt Cherries	100
Pickles, per qt Capers	5000
Pickles, per qt Eggs	100
Pickles, per qt Garlic	50
Pickles, per qt Green Beans	30
Pickles, per qt Mushrooms	50
Pickled Fish, 5 gallons barrel	300
Pineapple, Dried	30000

Type	Cost (sestertii)
Pine nuts, per lb	1000
Pistachios, per lb	1500
Plums	100
Pomegranate, per lb	800
Pork, per lb Bacon	400
Pork, per lb Ham	500
Pork, per lb Salted	300
Pork, per lb Sausage	100
Possum	3
Potatoes, per lb	4
Preserves, per Pint Cherry	40
Preserves, per Pint Raspberry	50
Preserves, per Pint Strawberry	50
Prunes, per lb	300
Pumpkin Seeds, per oz	3000
Raccoon	200
Raisins, per lb	20
Rations, (Standard)	300
Rations, (Iron)	500
Rice, per lbs	10
Rice Cake, per week	50
Rice Candies, per 100 pieces	10000
Roast Chicken	50
Roast Duck	80
Roast Goose	700
Roast Pheasant	500
Roast Turkey	300
Roast Ostrich	50000
Roast Roc	500000
Rye, Corn, per lb	70
Rye, per 1 lbs Sack	150
Salads Seaweed	1
Salads Kelp	1
Salads Worm and Grub	50
Salads Chef's Salad	100
Salmon, per lb Salted	1000
Salmon, per lb Smoked	1500
Salt, per lb	20
Salt Pork, per lbs	40
Sardines, per lb	400
Sashimi (finely chopped fish)	10
Sasparilla, per oz	1000
Sausage, per ft long	1000
Smoked Meat, per lbs Beef	50
Smoked Meat, per lbs Ham	70

Type	Cost (sestertii)
Smoked Meat, per lbs Shark	150
Smoked Meat, per lbs Bear	200
Smoked Meat, per lbs Venison	170
Smoked Meat, per lbs Squirrel	10
Snake, Fried	30
Soup, Per Serving Plankton	30
Soup, Per Serving Brine Shrimp	50
Spices Angelica, per oz	5
Spices Anise, per oz	3
Spices Arsenic, 1 sprig	100
Spices Basil, per oz	10
Spices Bergamont, per oz	3
Spices Belladonna, 1 sprig	40
Spices Borage, per oz	2
Spices Calendula, per oz	5
Spices Camomile, per Flower	3
Spices Caraway, per oz	2
Spices Catnip, 1 sprig	20
Spices Chervil, per oz	5
Spices Chicory, per stick	3
Spices Chives, per oz	2
Spices Cinnamon, per stick	10
Spices Clary, per oz	8
Spices Coriander, per oz	10
Spices Costmary, per oz	3
Spices Cumin, per oz	2
Spices Dillweed, per oz	3
Spices Fennel seed, per oz	10
Spices Fenugreek, per oz	30
Spices Garlic, 1 bud	5
Spices Ginger, 1 root	30
Spices Herbs, per lbs	5
Spices Holly, per sprig	5
Spices Horsehound, per oz	4
Spices Horseradish, per oz	1
Spices Hyssop, per oz	5
Spices Juniper, per oz	30
Spices Laurel, per oz	400
Spices Lemon Balm, per oz	20
Spices Liquorice Root, per oz	40
Spices Lovage, per oz	10
Spices Mandrake, Root	250
Spices Marigold, per oz	5
Spices Marjoram, per oz	5
Spices Mint, per oz	3

Type	Cost (sestertii)
Spices Mistletoe, sprig	100
Spices Mustard, per oz	5
Spices Nightshade, sprig	150
Spices Oregano, per oz	20
Spices Parsley, per oz	4
Spices Pepper, 1 oz	50
Spices Poppy Seed, per oz	800
Spices Rose Hips, per oz	500
Spices Rosemary, per oz	50
Spices Saffron, per 1oz	1500
Spices Sage, per oz	1
Spices Tarragon, per oz	100
Spices Thyme, per oz	10
Spices Tobacco, per pouch	5
Spices Wolvesbane, per sprig	100
Spices Woodruff, per oz	10
Steak, Beef	100
Steak Eel	400
Steak Lizard	200
Steak Shark	300
Steak Venison	600
Stew, per Pot	20
Sugar, per lb Brown	100
Sugar, per lb Cane	500
Sugar, per lb Lavender	1000
Sugar, per lb Lemon	1500
Sugar, per lb Orange	1500
Sugar, per lb Powdered	500
Sugar, per lb Raw	50
Sugar, per lb Rose	700
Sugar, per lb Violet	800
Sunflower Seeds, per oz	20
Tea, per lbs	100
Tomato, per Pint	1000
Tortilla, per 2 dozen	25
Turnips, per oz	10
Vanilla, per Bean	10000
Venison, per Haunch	20
Vinegar, per qt Blackberry	50
Vinegar, per qt Cider	10
Vinegar, per qt Malt	30
Vinegar, per qt Rose Petal	300
Walnut per lb	30
Walnuts, Black, per lb	10000
Wheat, per 10lbs Sack	50

Type	Cost (sestertii)
Wheat Berries, per lb	200
Wine	50
Yams, per lb	4

Furnishings

Type	Cost (sestertii)	Weight (pounds)
Armchair, Padded	300	20
Armchair, Wooden	100	15
Bed Double	800	25
Bed Single	500	15
Bench	200	25
Bookcase, 4' x 5'x 1' , Metal	1500	40
Bookcase, 4' x 5'x 1' , Wooden	500	20
Buffet	700	20
Cabinet	300-800	45
Candle 20 turns, 5' radius	10	-
Candelabra, Silver	1200	15
Candlesticks	40	-
Chair Padded	200	12
Chair Wooden	1000	10
Chandelier Candle	700	35
Chandelier Crystal	5000+	40
Chandelier Oil Lamp	1000	50
Chest of Drawers	500-700	30
Chime Lamp	2000	4
Desk	1500	72
Gnomish Firefly Lamp	900	6
Hurricane Lamp	400	3
Lamp	100	3
Lantern Hooded, 30' radius w/3 flaps	7000	2
Lantern Bulls-eye, 80' directional beam	1200	3
Lantern Shuttered, 30'radius w/1 flag	5000	2
Lantern Beacons, 240' radius	15000	100
Mattress Double, Feather	2200	20
Mattress Double, Straw	1300	25
Mattress Single, Feather	1500	15
Mattress Single, Straw	800	20
Oil Lamp	90	2
Pillow, Linen	400	1
Rug	100-200	5
Sofa/Couch	3000	35
Stool	3000	7
Table, 3' x 6'	100	30
Wardrobe, Plain	1500	50
Wardrobe, w/ Mirror	2500+	60

Miscellaneous

Type	Cost (sestertii)	Weight (pounds)
Anchor, Iron Boat	4000	
Anchor, Iron Ship	20000	
Altar Case Spruce	1500	5
Altar Case Granite	4000	15
Aspergills Gold	4500	20
Aspergills Silver	2000	10
Ball 2"	10	
Ball 4"	20	
Ball 12"	200	
Ball Lead	2	2
Banzai Tree, per 1 year of age	100	Varies
Bar, Iron, Magnetized	8cp	5
Barrel (empty)	200	30
Basket (empty)	40	1
Bath Oil, per oz	100	
Basin	200	
Bead Crystal	6	
Bead Glass	3	
Bee Hive, wooden	1000	10
Bell Glass	200	
Bell Golden	600	
Bell Metal	100	
Bell Silver	500	
Bell Tiny, Metal	50	
Bellows	500	2
Birdcage	200-500	1
Bow and Arrow, Toy, Set	200	1
Bowl Porcelain Boning	30	1
Bowl Porcelain Mixing	50	2
Bowl Porcelain Serving	70	1
Bowl Porcelain Soup	20	1
Bowl Ceramic	10	
Bowl Pewter	20	
Bowl Silver	200	
Bowl Wood Boning	10	1
Bowl Wood Mixing	30	2
Bowl Wood Serving	50	1
Bowl Wood Soup	8cp	1
Broom	10	2
Brush & Combs Gold	1200	
Brush & Combs Silver	200	
Brush & Combs Tortoise shell	100	
Brush & Combs Hardwood	10	
Cage, Silver wire	800	1

Type	Cost (sestertii)	Weight (pounds)
Caltrop, Golden	2000	
Candle Molds	12	4
Candle Snuffer	10	
Candle, Sealing Wax	30	1
Canisters, Birchbark 10oz	70	1
Canisters, Birchbark 12oz	90	1
Canisters, Birchbark 16oz	130	2
Cauldron 10 gallon	1000	50
Cauldron 30 gallon	2200	75
Cauldron 50 gallon	3200	100
Censer Gold	500	9
Censer Silver	300	5
Censer Brass	100	3
Chalk White, per stick	1	
Chalk Assorted Colours, per stick	2	
Charcoal, 10lbs bag	1000	10
Chess Set	1500	3
Chopsticks, pair	4cp	
Cigars, each	1000	
Circle Brass	200	
Circle Gold	1500	
Circle Platinum	2500	
Circle Silver	500	
Coal, 10lb bag	20	10
Cologne / Perfume, per oz	100+	
Comb	10	
Cone, Bull or Ram Horn	400	
Cone, Crystal	700	
Crucible	70	
Cruet	100	
Cube, Cast Iron	30	5
Cup Ceramic	8cp	
Cup Pewter	20	
Cup Silver	200	
Cup Wooden	4	
Cutlery Copper, per piece	10	
Cutlery Pewter, per piece	20	
Cutlery Silver, per piece	1000	
Cylinder Brass	800	
Cylinder Copper	800	
Cylinder Obsidian	1400	
Dice / Knucklebones Normal	2000	
Dice / Knucklebones Loaded	400	
Disc, Bronze	10	1
Doll Fabric	30	1

Type	Cost (sestertii)	Weight (pounds)
Doll Races Set	200	6
Doll Adventurer's Set	200	6
Doll Avatar Set	200	6
Doll Famous Wizards Set	200	6
Doll Heroes and Rulers set	200	6
Doll Porcelain	200	3
Doll Replica of self	1000	1
Earspoon	20	
Fish, Ornamental	100	5
Fishhook	10	
Fishnet, 10' x 10'	100	5
Fork, each Dinner, brass	4	
Fork, each Dinner, silver	80	
Fork, each Roast	10	
Frog Legs, 1 set	100	
Frog, Toy, Wooden, Jumping	1	
Furnace	3500	25
Gauze	10	
Glue, 2oz. Bottle	200	
Goblet Crystal	400	
Goblet Pewter	40	1
Goblet Silver	200	
Goblet Copper	20	1
Goblet Graduate, 1 dozen	500	1
Hammock	500	2
Hamper	70-150	1
Howdah	2500	
Icepick4	1	
Incense, per stick	100	
Kettle, Iron (various Sizes)	200-1200	varies
Kite	2	
Knives Boning	40	
Knives Cleaver	80	
Knives Dinner	4cp	
Knives Steak	10	
Lock w/ 2 keys	1000-10,000	1
Loom 2 foot	800	8
Loom 4 foot	1200	16
Loom 8 foot	1800	32
Magnet, Small	10	
Map/ Scroll Tube	80	1
Marbles, bag of 20	200	
Mat, Straw, 9sq ft	10	2
Mirror Metal, Small, 3" x 2"	500	
Mirror Metal, Large, 9" x 6"	1000	8

Type	Cost (sestertii)	Weight (pounds)
Mirror Silver, Small, 3" x 2"	2000	
Mirror Silver, Large, 9" x 6"	5000	8
Mop	8	3
Mugs	8	1
Muzzle, Dog, Leather	200	
Needle Sewing	1000-2000	
Oil Regular, Flask, 16 oz	100	1
Oil Greek-Fire, Flask, 16oz	1000	2
Pans Bread	60	1
Pans Cake	50	1
Pans Pie	70	1
Perfumes, per vial	100	1
Pin, 1 gross	150	1
Pitcher 60	1	
Plates Porcelain	50	1
Plates Wood	4	1
Pole Wooden, 10' long	3	5
Pot, Iron	50	2
Prayer Beads	200	
Puppets	200	varies
Ribbon	2	
Rocking Horse	400	3
Rubber Ball (solid), 3' diametre	3	
Shackles, 1 pair	500	3
Smelter, Small, 30' x 30'	100,000	75
Smelter, Medium, 50' x 50'	200,000	100
Smelter, Large, 75' x 75'	500,000	175
Soap, per 80z	10-20	10
Spinner, Brass	200	
Spoon	4	1
Sundial	2500	15
Tankards	9cp	2
Tea Pot	30	1
Tub	200-500	3
Washboard	20	2
Water, Holy, per Vial	2500	
Wax, Sealing/candle per pound	100	1
Whetstone	80	1
Wire, per yard	100	1

Acid
Throw a flask of acid as a grenade like weapon.

Alchemist's Fire
Alchemist's fire is a sticky, adhesive substance that ignites when exposed to air. Throw a flask of alchemist's fire as a grenade like weapon. On the round following a direct hit, the target takes an additional D6 points of damage. The target can take a full-round action to attempt to extinguish the flames before taking this additional damage. It takes a successful DEX roll to extinguish the flames. Rolling on the ground allows the character a +2 bonus. Leaping into a lake or magically extinguishing the flames automatically smothers the flames.

Antitoxin
After drinking antitoxin a character gets a +5 alchemical bonus on all saving throws against poison for 1 hour.

Caltrops
Caltrops resemble large metal jacks with sharpened points rather than balls on the ends of their arms. They are essentially iron spikes designed so that one point is always facing up. Scatter them on the ground in the hope that enemies step on them or are at least forced to slow down to avoid them. One bag of caltrops covers an area 5 feet square. Each time a creature moves into an area covered by caltrops (or spends a round fighting while standing in such an area), the creature may step on one. The caltrops make an attack roll against the creature. For this attack, the creature's shield, armour, and deflection bonus do not count. (Deflection averts blows as they approach, but it does not prevent a character from touching something dangerous.) If the creature is wearing shoes or other footwear, it gets a +2 armour bonus to AC.

If the caltrops succeed at the attack, the creature has stepped on one. The caltrop deals 1 point of damage, and the creature's speed is reduced by one-half because its foot is wounded. This movement penalty lasts for 1 day, until the creature is successfully treated with the Heal skill or until it receives at least 1 point of magical curing. A charging or running creature must immediately stop if it steps on a caltrop. Any creature moving at half speed or slower can pick its way through a bed of caltrops with no trouble. The DM judges the effectiveness of caltrops against unusual opponents.

Candle
A candle clearly illuminates a 5 foot radius and burns for 1 hour.
Chain Chain has a hardness of 10 and 5 hit points. It can be burst with a STR check.
Flask A ceramic, glass, or metal container fitted with a tight stopper. It holds 1 pint of liquid.

Flint and Steel
Striking the steel and flint together creates sparks. By knocking sparks into tinder, a character can create a small flame. Lighting a torch with flint and steel is a full-round action, and lighting any other fire with them takes at least that long.

Lamp, Common
A lamp clearly illuminates things in a 15-foot radius and burns for 6 hours on a pint of oil. It burns with a more even flame than a torch, but, unlike a lantern, it uses an open flame and it can spill easily, making it too dangerous for most adventuring. A lamp can be carried in one hand.

Lantern, Bullseye
A bullseye lantern has only a single shutter, with its other sides being highly polished inside to reflect the light in a single direction. It illuminates a cone 60 feet long and 20 feet wide at the end, and it burns for 6 hours on a pint of oil. A lantern can be carried in one hand.

Lantern, Hooded
A hooded lantern is a standard lantern with shuttered or hinged sides. A lantern can be carried in one hand. It clearly illuminates a 30 foot radius and burns for 6 hours on a pint of oil.

Lock
A lock is worked with a large, bulky key.

Manacles
These manacles can bind a Medium-size creature. The manacled character can use the Escape Artist skill to slip free. To break the manacles requires success at a Strength check. Manacles have 10 hit points. Most manacles have locks; add the cost of the lock to the cost of the manacles. For the same price, one can buy manacles for Small creatures. For Large creatures, manacles cost ten times this amount, and for Huge creatures, one hundred times this amount. Gargantuan, Colossal, Tiny, Diminutive, and Fine creatures can only be held by specially made manacles.

Oil
A pint of oil burns for 6 hours in a lantern. Use a flask of oil as a grenade like weapon. Use the rules for alchemist's fire, except that it takes a full-round action to prepare a flask with a fuse. Once it is thrown, there is only a 50% chance that the flask ignites successfully. A pint of oil poured on the ground covers an area 5 feet square (provided the surface is smooth). If lit, the oil burns for 2 rounds and deals D3 points of damage to each creature in the area.

Piton
When a wall doesn't offer handholds and footholds, a climber can make his or her own. A piton is a steel spike with an eye through which a rope can be looped.

Ram, Portable
This iron-shod wooden beam is the perfect tool for battering down doors. Not only does it provide a +2 circumstance bonus on a Strength check to break open a door, but it allows a second person to help without having to roll, adding another +2 to the check.

Siege Equipment

Type	Damage	Weight (kgs)	Range (metres)	Cost (sestertii)
Ballista, Heavy	5D6	180	45	80,000
Ballista, Light	3D6	45	30	40,000
Ballista, Medium	4D6	135	35	60,000
Ballista Bolts	-	5	-	50
Cannon, Heavy	6D10	2000	60	90,000
Cannon, Light	4D50	1000	60	75,000
Cannon Shot	-	40	-	150
Catapult, Heavy	6D6	225	60	50,000
Catapult, Light	4D6	113	45	25,000
Catapult, Medium	5D6	135	55	35,000
Catapult Stones	-	9	-	30
Catapult Stones, Chain	-	14	-	50
Firedrake	6D6	180	18	15,000
Firedrake Ammunition	-	9	-	2000
Ram, Battering	special	135	-	10,000
Scorpio	3D6	9	45	15,000
Scorpio Arrows	-	1	-	30 per 6
Siege Tower	-	315	-	80,000
Trebuchet	5D6	450	40	75,000
Trebuchet Stones	-	5	-	20
Vehicular Caltrops	2D6	-	-	1

Ballista:
The ballista is essentially a very large crossbow. It makes attacks with a straight attack roll (D20) with no modifications (no character base attack bonuses, ability modifiers, etc.) except for range. Loading and cocking a ballista is 3 full-round actions.

Cannon:
Cannons are typically resting on a wooden carriage (some cannons like the swivel cannon are fixed in position once mounted, though they can be remounted in D4 minutes in a new position). These carriages can be move to a new position on a ship given enough time. Cannons use smoke powder to function. One shot uses 10 charges of powder.

Catapult, Heavy:
A heavy catapult is a large engine capable of throwing rocks or heavy objects with great force. When fired, one of the crew makes a Profession (siege engineer) roll. If successful, where the object actually lands is determined by rolling D12 and consulting the Deviation (10 ft. to 16 ft) The centre is the desired target. If the check is failed, the DM secretly rolls and consults the same deviation diagram.

The result is now where the catapult is actually aimed. This new result is used as the centre to determine the actual deviation of the attack. Loading the catapult and preparing it to fire takes the full crew 8 full rounds. Initially aiming (or reaiming) takes 10 minutes

in addition to loading and preparation time. Three to four crew members can operate the device in three times this time. Fewer than three crew members cannot operate the device.

Catapult, Light:
This is a smaller, lighter version of the heavy catapult. Two crew members can load and prepare this device in 5 full rounds and aim (or reaim) in 5 minutes. One person can crew the engine, but it takes three times the time to aim and prepare.

Catapult Stone Chain Shot:
Made of two small catapult stones chained together, this ammunition can be fired from catapults. Chain shot is especially good at tearing through sails and rigging, dealing double its normal damage to that form of propulsion. It deals normal damage to a creature, and if hit, the creature will be knocked prone. Chain shot is relatively ineffective against ships themselves, dealing only 2D6 points of damage for a light catapult, or 4D6 points of damage for a standard catapult.

Firedrake:
These huge siege engines are often mounted on wheels. This apparatus fires gouts of Alchemist's fire in either a 18 metre line or a 9 metre cone (siege crew leader's choice). Targets in the area take 6D6 points of fire damage; those who fail their saves also catch on fire. A firedrake with the broken condition that suffers a further mishap explodes, dealing its damage to all creatures within a 6 metre burst. Firedrakes have 70 hit points.

Ram:
The ram is an immense beam, similar to a ship’s mast, with one end covered with iron shaped into a ram’s head; hence its name. It is suspended from another beam like a balance arm by cables around its middle, and this in turn is supported at both ends by posts fixed in the ground. It is drawn back by a huge number of men who then push it forward in unison with all their might so that it hits the wall with its iron head. Make an unmodified attack roll against the AC of the construction, with failed attempts dealing no significant damage. The ram can be used to make an attack every 3 rounds if fully crewed. With five to nine people, it can be used every 6 rounds. Fewer than five people cannot operate it.

Scorpio:
The scorpio was a crossbow-like device that fired smaller arrows with deadly accuracy used both in the field and in sieges. They were so-named for their deadly, armour-piercing sting and could be operated by just one or two men. Scorpios were meant to kill and injure enemy troops, rather than break down enemy fortifications. Thanks to their smaller size, they could be mounted on or in siege towers. Legionaries either side would continuously keep turning cranks which turned a chain, which operated the various mechanisms to load and fire the catapult. All that was needed was for another soldier to keep feeding in more arrows.

Siege Tower:
This is a large wooden tower on wheels or rollers that can be rolled up against a wall to allow attackers to scale the tower and thus to get to the top of the wall with cover. The wooden walls are usually 1 foot thick.

Trebuchet:
The Trebuchet was a weapon used during siege warfare. The Medieval Trebuchet was similar to a catapult, or stave sling, which was used for hurling heavy stones to smash castle or city walls.

Vehicular Caltrops:
This piece of equipment is a device holding a container of heavy duty caltrops. The container can be opened by the driver, releasing the caltrops across the road surface. The container can removed so it can be refilled. Damage: 2D6

Storage

Type	Cost (sestertii)	Weight (pounds)
Backpack Leather, holds 450gp	200	2
Backpack Wicker, holds 150gp	5	1
Bag Cloth, holds 10-50gp	7-15	2
Bag, Cloth, Tiny	2	1
Barrel Wooden, Small, holds 5 gallons	100	5
Barrel Wooden, Small, holds 30 gallons	200	30
Barrel Wooden, Medium, holds 40 gallons	400	40
Barrel Wooden, Large, holds 50 gallons	500	50
Barrel Wooden, Large, holds 60 gallons	600	60
Basket Wicker, Small, holds 75gp	2	-
Basket Wicker, Large, holds 200gp	4	1
Bolt Case	100	1
Bottle Ceramic, holds 32 oz	30	1
Bottle Glass, holds 32 oz	1000	1
Bottle Crystal, hold 32 oz	300	1
Box Bread	50	2
Box Prayer	2500	6
Box Snuff	30	1
Box Strong	12,000	25
Box Tinder	70	3
Bucket Leather, holds 3 gallons	50	3
Bucket Wooden, holds 1 gallon	80	2
Bucket Iron, 5 gallons	40	5
Cabinet	300-800	20
Carafe Ceramic, holds 32oz	40	2
Carafe Glass, hold 32 oz	1200	2
Carafe Crystal, holds 32oz	30	2
Cask holds 5 gallons	1000	2
Chest Armour	5000	15

Type	Cost (sestertii)	Weight (pounds)
Chest Common, Wooden, Large	200	25
Chest Common, Wooden, Small	100	10
Crates Small	20	5
Crates Medium	50	10
Crates Large	80	15
Crates Extra Large	100	20
Decanter Pottery	3	1
Decanter Silver	500	1
Drums 100 gallon	1000	20
Drums 200 gallon	1500	40
Flask, hold 16oz Clay	10	1
Flask, hold 16oz Ceramic	20	1
Flask, hold 16oz Glass	100	1
Flask, hold 16oz Crystal	150	1
Flask, hold 16oz Steel	300	1
Flask, hold 16oz Silver	2000	1
Jars, Stoppered Ceramic 2oz	3	1
Jars, Stoppered Ceramic 4oz	4	1
Jars, Stoppered Ceramic 6oz	5	1
Jars, Stoppered Ceramic 8oz	6	1
Jars, Stoppered Ceramic 10oz	7	1
Jars, Stoppered Ceramic 12oz	8	1
Jars, Stoppered Ceramic 14oz	9	1
Jars, Stoppered Ceramic 16oz	10	1
Jars, Stoppered Ceramic 20oz	13	1
Jars, Stoppered Ceramic 24oz	15	1
Jars, Stoppered Ceramic 32oz (1 quart)	20	1
Jars, Stoppered Ceramic 64oz (2 quart)	50	2
Jars, Stoppered Ceramic 128oz (1gallon)	100	3
Jug, Ceramic, hold 1 gallon	1000	1
Keg Wooden, Small, hold 5 gallons	150	2
Keg Wooden, Large, holds 25 gallons	450	10
Mapcase, Sealed	1500	7
Pail Metal, hold 1 gallon	100	1
Pail Wooden, holds 1 gallon	70	1
Pouch Belt, Leather, Small, holds 60gp	150	-
Pouch Belt, Leather, Large, holds 100gp	100	1
Pouch Belt, Cloth, Small, holds 45 gp	100	-
Pouch Belt, Cloth, Large, holds 75 gp	150	-
Quiver Small, holds 12 Arrows	70	1
Quiver Large, holds 24 Arrows	1000	2
Quiver Regular, Small, holds 20 Quarrels	150	1
Quiver Regular, Large, holds 40 Quarrels	100	2
Quiver Siege, hold 10 Quarrels	500	3
Rucksack	100	1

Type	Cost (sestertii)	Weight (pounds)
Sack Cloth, Small, hold 50gp	16	-
Sack Cloth, Large, holds 300gp	40	-
Sack Leather, Small, hold 75gp	20	-
Sack Leather, Large, holds 450gp	45	1
Scabbard, Bastard Sword	200	1
Scabbard, Broad Sword	100	1
Scabbard, Falchion Sword	150	1
Scabbard, Khopesh Sword	250	1
Scabbard, Long Sword	200	1
Scabbard, Short Sword	150	1
Scabbard, Two-handed Sword	250	1
Scabbard, Scimitar	150	1
Scroll Case	80	-
Skins Oil	50	1
Skins Water	100	1
Skins Wine	100	1

Tools

Type	Cost (sestertii)	Weight (pounds)
Abacus	150	2
Acetylsalicylic Acid, per dose	300	-
Alchemist's Lab	50,000	40
Anvil, Iron	4500	70
Anvil, Large, Iron	9500	160
Apron Canvas	400	1
Apron Leather	1000	3
Armillary Sphere	6000	5
Artisan's Tools	500	5
Artisan's Tools, Masterwork	5500	5
Astrolabe, Bronze	800	2
Auger	50	2
Awl, Leatherworking	20	1
Backsaw	1500	5
Balance, Small, Golden	1000	5
Balance and Weights Small Measures	5000	5
Balance and Weights Large Measures	15000	25
Beaker Small	50	1
Beaker Medium	100	1
Beaker Large	300	2
Bellows, Small	500	5
Bellows, Large	1000	10
Blade Knife	30	-
Block & Tackle, lifts 1,000lbs	500	5
Book, Blank, Papyrus 25 pages	5000	3
Book, Blank, Papyrus 50 pages	9000	5

Type	Cost (sestertii)	Weight (pounds)
Book, Blank, Papyrus 75 pages	12,500	7
Book, Blank, Papyrus 100 pages	17,500	9
Book, Blank, Papyrus 200 pages	30,000	15
Book, Blank, Papyrus 500 pages	72,500	25
Book, Blank, Parchment 25 pages	6500	2
Book, Blank, Parchment 50 pages	12,000	4
Book, Blank, Parchment 75 pages	17,000	6
Book, Blank, Parchment 100 pages	22,000	8
Book, Blank, Parchment 200 pages	40,000	13
Book, Blank, Parchment 500 pages	101,500	20
Book Case, 60-75 Normal books	27,500	15
Book Lock	6500	1
Braces, per pair	200	1
Branding Iron	800	4
Brazier	1500	1
Brush, Paint Fine	10	-
Brush, Paint Medium	20	-
Brush, Paint Wide	50	-
Burette	1500	2
Burner	50	2
Butchering Tools Mallet	800	20
Butchering Tools Hooks, set of 8	500	8
Butchering Tools Long Razor	700	1
Butchering Tools Skinning Knife	500	1
Cabinet	5000	25
Centrifuge	2500	25
Chain Iron, Light, 1 ft	300	1
Chain Iron, Medium, 1ft	250	2
Chain Iron, Heavy, 1 ft	400	3
Chain Silver, Light, 1 ft	450	-
Chain Silver, Medium, 1 ft	540	1
Chain Gold, Fine, 1 ft	6000	1
Chain Gold, Light, 1 ft	7500	2
Chalk	1	-
Chisel, Wood	1200	1
Chisel, Stone	12,000	5
Climber's Kit	8000	5
Coinminter	1,000,000	100
Crowbar, 3ft long	200	4
Decanter Crystal	1000	1
Decanter Ceramic	6	3
Decanter Silver	400	2
Disguise Kit	5000	8
Dissection Instruments	1000	2
Distilling Coil	500	1

Type	Cost (sestertii)	Weight (pounds)
Divers Safety Line, 150ft long	150	-
Divers Belt w/6 Pouches	10	1
Divers Bag (Floatation)	20	1
Divers Goggles	150	-
Divers Mask	300	-
Divers Net Sack	10	-
Divers Snorkel Tube	20	-
Divers Weights (Lead)	10	1
Divers Weight Belt Heavy	50	3
Dreambliss, per dose	200-120,000	-
Easel	4000	2
File, Metal	200	-
Filter per sq ft	10	-
Funnel	40	-
Glass Rods Small	30	1
Glass Rods Medium	40	1
Glass Rods Large	80	2
Glass Working Tools, 1 set	5000	5
Gloves	200	1
Glue, per lb	300	1
Grindstone	2000	50
Hacksaw	200	2
Hammer	300	4
Healer's kit	5000	1
Hoe	300	4
Hourglass	2500	1
Ice Chest	3500	18
Ink assorted colours, 2oz	250	-
Ink Black, 2oz	100	-
Jeweller Hammer and Chisel	10,000	4
Kiln	12,000	120
Ladder Rope, 25ft long	300	12
Ladder Wooden, 12 ft long	100	25
Leeches, per jar	1000	1
Lens, Concave/Convex	500	-
Locks Good	10,000	1
Locks Excellent	20,000	2
Loom 300-700	35	
Magnets, per 1" sq	50	1
Magnifying Glass	10,000	-
Map Making Kit	3500	5
Monocle	400	-
Mortar, per lb	5	1
Nail (Iron), per lbs	1000	1
Nail (Silver)	1000	1

Type	Cost (sestertii)	Weight (pounds)
Oven	6000	60
Paint (Assorted Colours), per gallon	100-200	-
Paint, Small Pot	20	-
Papyrus, per sheet	150	-
Parchment, per sheet	1000	-
Paper, per sheet	3000	-
Pen Quill	5	-
Pick Axe, Mining	400	5
Pitch, per lb	10	1
Pliers	100	-
Plow	800	15
Prism	1000	-
Quern	2000	20
Rake	20	3
Razor	100	-
Reaver	500	4
Retort 3 oz	10	1
Retort 5 oz	50	2
Retort 12 oz	100	4
Retort 1 qt	500	5
Ring, Signet	500	-
Rockstriker Pick	10,000	8
Rope per 50' coil	10	10
Scale, Merchant's	200	1
Scissors	50	-
Seed-Sower, holds 100 seeds	200	5
Shepard's Crook	1000	10
Shearing Pack	1600	-
Sieve	500	8
Slate 1 ft sq	1000	2
Slate 4 x 6 ft	3000	16
Smelter Small	100,000	75
Smelter Medium	200,000	100
Smelter Large	500,000	175
Soap, per lb	50	1
0ade/ Shovel	300	6
0arker	50	-
0ectacles	800	-
0ell Component Pouch	500	3
0onge	30	-
0yglass	100,000	1
Steel Etcher	100,00	-
Stoppers	5	-
String / Twine, Hemp, 250 ft long	1000	1
Thieves' Tools	3000	1

Type	Cost (sestertii)	Weight (pounds)
Thieves' Tools, Masterwork	10,000	2
Tongs	40	-
Trowel 5"	200	1
Trowel 7"	400	1
Trowel 10"	500	1
Tubing Glass, per foot	30	1
Tweezers	50	-
Vial Ceramic	100	1
Vial Clay	25	1
Vial Crystal	400	1
Vial Glass	300	1
Vial Silver	700	1
Vial Steel	500	1
Vial Rack, holds 6 vials	100	1
Water Clock	100,000	200
Wheelbarrow, holds 400lb	1500	35

Raw Materials

Type	Cost (sestertii)
Adamantite, per oz	100
Adobe, per lb	5
Alabaster, per lb	1500
Alexandrite Grape Sized	2000
Amber Grape Sized	200
Amethyst	10,000
Andalusite Grape Sized	1000
Aquamarine Grape Sized	4000
Arandur, per l oz	1000
Ash, Volcanic	10
Azurite Grape Sized	8000
Bamboo, 100 10' lengths	100
Banded Agate Grape Sized	1
Banitoite Grape Sized	500
Bitumen	5
Black Opal	10,0000
Black Sapphire	50,0000
Bloodstone Grape Sized	400
Blue Quartz	1000
Brass Ingot, 5lb	30
Brass Wire, per ft	4
Bronze Ingot, 5lb	20
Bronze Wire, per ft	3
Carbon	5
Carnetlian Grape Sized	4000
Chalcedony	5000

Type	Cost (sestertii)
Chrysocolla Grape Sized	30
Chrysoberyl Grape Sized	1000
Chrysoprase Grape Sized	5000
Cinnabryl, per ounce	100
Citrine	5000
Clay, per lb	1
Copper Ingot, 5lb	250
Copper Wire, per ft	3
Coral Grape Sized	2000
Crimson essence	20,000
Crystal Rod	300
Diamond Grape Sized	30,000
Emerald Grape Sized	80,000
Eye Agate	1000
Fire Opal	100,000
Garnet Grape Sized	40
Glass Opaque	80
Glass sheet	200
Gold Ingot, 3lb	2900
Granite Black	200
Hawk's-eye Grape Sized	2500
Hematite Grape Sized	500
Iron Ingot, 3lb	4
Iron Wire, per ft	5
Ivory	100-60,000
Jacinth	500,000
Jade	10,000
Jasper Grape Sized	4
Kunzite Grape Sized	500
Lapis Lazuli Grape Sized	5000
Lead Ingot, 10lb	50
Lead Wire, per ft	4
Malachite Grape Sized	1000
Mithral Ingot, 2 lb	3500
Moonstone Grape Sized	10
Moss Agate	1000
Obsidian	1000
Onyx	5000
Opal Grape Sized	10,000
Pearl Grape Sized	10,000
Peridot Grape Sized	600
Platinum Ingot, per 2 lb	5000
Quartz Grape Sized	1000
Red Steel, per ounce	20
Rhodochrosite Grape Sized	2000

Type	Cost (sestertii)
Rock Crystal	5000
Ruby Grape Sized	70,000
Sapphire Grape Sized	50,000
Sardonyx Grape Sized	4
Scapolite Grape Sized	15,000
Sepentine Grape Sized	100
Silver Ingot, per 2 lb	1100
Spinel Grape Sized	500
Star Rose Quartz	5000
Star Ruby	500,000
Star Sapphire	500,000
Steel, per ounce	1
Steel Ingot, per 5lb	80
Sunstone Grape Sized	20,000
Tazanite Grape Sized	30,000
Tiger's eye Grape Sized	700
Tin Ingot, 5lb	50
Tin Wire, per ft	1
Titanite Grape Sized	2000
Topaz Grape Sized	30,000
Tourmaline Grape Sized	20
Turquiose Grape Sized	4000
Wood, Common, 1 cord	5000
Zinc	80
Zircon Grape Sized	1000

Alchemist's Lab
This includes beakers, bottles, mixing and measuring equipment and a miscellany of chemicals and substances. This is the perfect tool for the job and so adds a +2 bonus to Alchemy checks, but it has no bearing on the costs related to the Alchemy skill. Without this lab, a character with the Alchemy skill is assumed to have enough tools to use the skill but not enough to get the +2 bonus that the lab provides.

Artisan's Tools
This is the set of 0ecial tools needed for any craft. Without these tools, a character has to use improvised tools (-2 penalty on check) if the job can be done at all.

Artisan's Tools, Masterwork
As artisan's tools, but these are the perfect tools for the job, so the character gets a +2 bonus on the PP check.

Climber's Kit
Pitons, boot tips, gloves, and a harness that aids in all sorts of climbing. This is the perfect tool for climbing and provides a +2 bonus to Climb checks.

Disguise Kit
A bag containing cosmetics, hair dye, and small physical props. This is the perfect tool for disguise and adds a +2 bonus to Disguise checks. It's exhausted after ten uses.

Healer's Kit
This kit is full of herbs, salves, bandages and other useful materials. It is the perfect tool for anyone attempting a Heal check. It adds a +2 bonus to the check. It's exhausted after ten uses.

Magnifying Glass
This simple lens allows a closer look at small objects. It is useful as a substitute for flint, steel, and tinder when starting fires (though it takes light as bright as direct sunlight to focus, tinder to light, and at least a full-round action to light a fire with a magnifying glass). It grants a +2 bonus on Appraise checks involving any item that is small or highly detailed, such as a gem.

Scale, Merchant's
This scale includes a small balance and pans and a suitable assortment of weights. A scale grants a +2 bonus to Appraise checks involving items that are valued by weight, including anything made of precious metals.

Thieves' Tools
These are the tools needed to use the Disable Device and Open Lock skills. The kit includes one or more skeleton keys, long metal picks and pries, a long-nosed clamp, a small hand saw, and a small wedge and hammer. Without these tools, a character will have to improvise tools, and suffer a -2 penalty on Disable Device and Open Locks checks.

Thieves' Tools, Masterwork
This kit contains extra tools and tools of better make, granting a +2 bonus on Disable Device and Open Lock checks.

Water Clock
This large, bulky contrivance gives the time accurate to within half an hour per day since it was last set. It requires a source of water, and it must be kept still because it marks time by the regulated flow of droplets of water. It is primarily an amusement for the wealthy and a tool for the student of arcane lore. Most people have no way to tell exact time, and there's little point in knowing that it is 2:30 PM if nobody else does.

Ancient Transportation

Table 1: Methods of Transport

Shown in these tables are the type of transport, its size in metres, Hit Points, Armour Class, Acceleration/Deceleration Factor, Manoeuvre Rating, and Speed in kilometres per hour. Air types while not historically accurate would certainly be available in a magical campaign.

Air Type	Size (metres)	HPs	AC	A/DF	MR	Speed
Airship	6	50	5	1	3	90
Balloon	30	30 (basket)	6	1	3	35
Dragon	26-54	350-600	1	3	5	330
Flying Broom	1	10	10	3	5	160
Flying Carpet	1-2	10	10	2	2	100
Giant Bat	5	48	7	1	3	100
Giant Eagle	6	32	7	3	5	340
Giant Owl	6	32	6	2	4	150
Giant Vulture	2	18	7	1	3	200
Griffon	3	56	3	1	2	350
Hippogriff	3	27	5	1	2	370
Manticore	5	30	4	1	2	250
Pegasus	2	32	6	1	5	350
Skyship, Flying Fortress	200	1500	0	1	1	75
Skyship, Skimmer	5	45	5	3	4	300
Skyship, Transport Civilian Large	40	600	4	1	1	100
Skyship, Transport Civilian Standard	20	450	4	1	1	100
Skyship, Transport Military	20	450	4	1	2	250
Skyship, Warship Escort	35	550	3	1	1	350
Skyship, Warship Destroyer	55	750	2	1	1	250
Skyship, Warship Dreadnaught	80	950	1	1	1	150

Land Type	Size (metres)	HPs	AC	A/DF	MR	Speed (kph)
Carriage Common	4.5	90	9	As per animal	1	As per animal
Cart Wood	3	30	9	As per animal	1	As per animal
Cart Steel	3	60	8	As per animal	1	As per animal
Chariot Riding	3	60	9	As per animal	2	As per animal
Chariot War	4	80	8	As per animal	3	As per animal
Coach Ornamental	5	30	9	As per animal	1	As per animal
Sleigh Four Person	4	60	9	As per animal	1	As per animal
Sleigh Two Person	3	30	9	As per animal	1	As per animal
Wagon Closed/Open	5	60	9	As per animal	1	As per animal

Water Type	Size (metres)	HPs	AC	A/DF	MR	Speed (kph)
Barge	24	625	2	1	1	20
Canoe	2	10	9	1	5	5
Caravel	15	550	2	2	2	16
Cog	25	625	2	3	2	20
Currach	30	700	2	2	2	12
Dromon	32	700	2	2	2	18
Galleon	64	2500	2	2	2	16
Galley	40	1500	2	1	1	8

Water Type	Size (metres)	HPs	AC	A/DF	MR	Speed (kph)
Grain Ship	55	1500	2	1	1	7
Hemiola	20	625	2	3	2	25
Hexareme	40	850	2	1	1	18
Junk	23	600	2	2	2	8
Kayak	2	10	9	1	5	5
Keelboat	23	600	2	2	2	10
Knarr	16	550	2	3	2	27
Liburna, Liberna and Bireme	30	750	2	2	1	25
Longship	23	675	2	3	2	20
Penteconter	30	700	2	2	1	17
Quadrireme	35	800	2	2	1	15
Quinquereme	40	900	2	2	1	12
Raft	6	30	9	1	3	1
Rowboat	4	60	9	1	3	2
Trireme	37	800	2	2	1	17

Table 2: Buying Costs

Listed in these tables are the costs for each form of transport.

Air Type	Cost (sestertii)
Airship	500,000
Allied Dragon (intelligent)	Not applicable
Balloon	100,000
Flying Broom	17,000
Flying Carpet	20,000
Skyship, Flying Fortress	1,000,0000
Skyship, Skimmer	50,000,0000
Skyship, Transport Civilian Large	7,000,0000
Skyship, Transport Civilian Standard	4,000,0000
Skyship, Transport Military	8,000,0000
Skyship, Warship Escort	8,000,0000
Skyship, Warship Destroyer	15,000,0000
Skyship, Warship Dreadnaught	25,000,0000
Trained Dragon (semi intelligent)	170,000
Trained Giant Bat	45,000
Trained Giant Eagle	45,000
Trained Giant Owl	30,000
Trained Giant Vulture	25,000
Trained Griffon	50,000
Trained Hippogriff	50,000
Trained Manticore	25,000
Trained Pegasus	40,000

Airship:
An airship or dirigible balloon is a type of aerostat or lighter-than-air aircraft that can navigate through the air under its own power. They gain their lift from large gas bags filled with a lifting gas that is less dense than the surrounding air.

Balloon:
In aeronautics, a balloon is an unpowered aerostat, which remains aloft or floats due to its buoyancy. A balloon may be free, moving with the wind, or tethered to a fixed point. It is distinct from an airship, which is a powered aerostat that can propel itself through the air in a controlled manner. Many balloons have a basket, gondola or capsule suspended beneath the main envelope for carrying people or equipment (including cameras and telescopes, and flight-control mechanisms).

Dragons, Allied and Trained:
Even though its not easy to get one, the abilities of a dragon is well worth the cost.
The dream mount for many characters is a dragon. While other flying creatures might be cheaper or easier to train as mounts, nothing beats the look of awe from friends and foes when they see you swoop in astride a mighty draconic steed There are two methods of getting a dragon as your mount: raising the dragon from youth or negotiating with a full-grown dragon. The first may be easier and cheaper, but requires far more time. As strong, quadrupedal creatures, dragons can carry a lot of weight, even in flight. A dragon can carry a rider while swimming, but not while burrowing.

Raising a true dragon from an egg until it's large enough to use as a mount can take several years. Even lesser dragons, such as wyverns, mature at such a slow rate that most characters simply aren't willing to wait the necessary amount of time. When you successfully complete the rearing process, you can begin to teach the domesticated dragon how to perform tasks. Although intelligent, a dragon requires training before it can bear a rider in combat. Training a dragon you have reared to serve as a mount requires six weeks of work.

Riding a dragon requires an exotic saddle. A dragon can fight while carrying a rider, but the rider cannot also attack unless he or she succeeds on a Ride check. Even a trained or "tamed" dragon is still a dragon, not an ordinary domestic animal, with its own needs and desires. A young dragon is more like a very intelligent child than a simple animal (Intelligence score ranging from 8 to 18, depending on age and kind) and may well be smarter than its rider. With such a creature, patience and tact produce better results than harsh words and punishment. Expect a dragon to learn quickly, but allow for its inexperience to cause mistakes. like children and pets, dragons get tired, and it's best to let them rest when they do.

It's likely that a character seeking a draconic mount can't or won't put in the time necessary to rear a dragon. In such a case, the best option is to bargain with your would-be mount. (Using magic such as charm spells is a mistake, since the magic eventually wears off, and such coercion angers the dragon.) These negotiations always require some form of payment or reward to the dragon, which should take a form appropriate to the

dragon variety (such as pearls for a bronze dragon) and should amount to at least 100 sestertii per hit point of the dragon per year of service-paid in advance, of course, generally as soon as the negotiations are over.

Most potential dragon mounts begin with an indifferent attitude toward a character who approaches them. A dragon whose attitude is changed to helpful by a character can be trained to serve as a mount, but only as long as it's treated well and regularly rewarded. Promising an increase reward can help persuade a dragon to cooperate; each additional payment of 500 sestertii provides a +1 circumstance bonus on any CHA check made to change a dragon's attitude. A dragon whose alignment isn't within one step of its rider's isn't likely to serve for very long, even if the initial negotiations succeed.

A dragon mount, although it may be loyal to you, is still an independent, intelligent creature with a mind of its own. Expect the DM to treat a dragon mount as an NPC, not as a passive participant (a rider with only a modest Charisma score can expect to lose a lot of arguments with his or mount). A dragon mount ages normally, but does not gain experience points. Regardless of bow well you treat your dragon, a time will likely come when the dragon wants to leave.

Because of a dragon's relatively slow growth rate during its extremely long life span, chances are you will gain experience (level) faster than the dragon grows (and thereby increases its effective character level). Also, a dragon mount that reaches adult age often begins thinking about leaving to raise a family. Trying to keep a dragon from leaving, even if you manage to succeed, is a mistake. Whether or not a dragon discusses parting company before doing so depends on its alignment and its relationship with you. If you keep your promises to a dragon mount and let it leave when it chooses, usually it will remain friendly toward you. If it holds a grudge against you, it may attack openly, or it may plot secretly for years before striking.

Flying Broom:
This broom is able to fly through the air as if affected by a flight spell for up to 9 hours per day (split up as its owner desires). The broom can carry 90 kgs. In addition, the broom can travel alone to any destination named by the owner as long as he has a good idea of the location and layout of that destination. It flies to its owner from as far away as 1 km per WIS when he speaks the command word.

Flying Carpet:
A magic carpet, also called a flying carpet, is a legendary carpet that can be used to transport humans who are on it instantaneously or quickly to their destination. This rug is able to fly through the air as if affected by a flight spell of unlimited duration. Beautifully and intricately made, each carpet has its own command word to activate it—if the device is within voice range, the command word activates it, whether the speaker is on the rug or not. The carpet is then controlled by spoken directions.

Skyship, Flying Fortress:
These are huge outposts that serve as a base of operations for other ships. A flying fortress is a powerful battle station crafted to establish military dominance in a section of airspace or over a stretch of ground. Powerful overlords with access to mighty magics often craft these war machines to serve as mobile strong points. Nothing inspires more terror in an enemy army than the sight of a floating sky fortress disgorging flights of harpies, manticores, and other creatures to swoop from the sky and rain destruction upon the earth below. Flying fortresses are generally designed with portals, windows, arrow slits, and other features that make it much more suited for battle than its base ship.

Skyship, Skimmer:
The sleek, deadly skimmers are designed for swift strikes against slower or stationary targets. In battle, when the skimmer passes an enemy ship, the marines leap aboard to overpower its crew and claim its cargo as their own. Needless to say, skimmers are quite popular with pirates and other marauders. However, these ships are often used by more legitimate navies during times of war as scouts, pursuit ships, and patrol vessels.

Skyship, Transport Civilian:
Skyships are the equivalent of water borne ships and are used primarily for transporting supplies and valuable commodities across the sky. Sky ships resemble 15-18th century European style wooden sailing ships. The workhorse of the sky, these ships serve as merchants, explorers, and travellers. In regions where hunting and gathering are common, crews use these ships to scout out new regions and harvest plants and animals they find there. Transports have size enough to carry significant weapons, cargo, and crewmen, but not so large that it is too expensive for the average trader (or buccaneer) to build and maintain. Transports are mainly cargo freighters and can be built in a wide variety of sizes. These vessels can be used for many jobs from transporting ore to passengers.

Skyship, Military:
Military transports carry very few weapons relying heavily on other ships for protection. Instead they carry troopers, siege weapons and cargo.

Skyship, Warship:
These are among the slowest and least manoeuvrable skyships. They are however well armed and can absorb a considerable amount of damage. Larger warships can also serve as mobile bases for skimmer squadrons. It transports skimmers to the scene of a battle, launches them, and recovers and re-arms the ones that survive the battle. They are usually tied onto the sides of the warship. A warship can carry 1 skimmer per side for every 10 metres of size.

Trained Giant Bat:
Considered to be the fastest non-magical transport in cavernous underground realms, giant bats are domesticated in captivity to serve as riding animals. Stables that accommodate these massive creatures are only commonly found in cities built in larger underground caverns, owing to the greater space required for training and exercise, though the outriders of some subterranean races fly them almost to the surface.

These creatures require exotic saddles to ride. They are over three times the size of a dwarf, being as heavy as a llama, and as such they prove to be a genuine threat to civilians; while they spawn individually, giant bats can quickly fly down to an unaware dwarf and make quick work of them, or sneak through unsecured entrances and cause havoc inside of the fortress. If captured by cage traps, giant bats can be trained into high-value pets. They can also be trained into hunting beasts, though not as war ones. If a breeding pair of giant bats is captured, they can also be used in the meat industry; while they produce less meat than other "giant" creatures, giant bat butchering returns are worth four times as much as those of common domestic animals. Giant bats are exotic mounts and are sometimes seen being ridden by goblins during sieges.

Trained Giant Eagle:
A typical giant eagle stands about 10 feet tall, has a wingspan of up to 20 feet, and resembles its smaller cousins in nearly every way except size. It weighs about 500 pounds. A giant eagle attacks from a great height, diving earthward at tremendous speed. When it cannot dive, it uses its powerful talons and slashing beak to strike at its target's head and eyes. Although intelligent, a giant eagle requires training before it can bear a rider in combat. To be trained, a giant eagle must have a friendly attitude toward the trainer.

Training a friendly giant eagle requires six weeks of work. Riding a giant eagle requires an exotic saddle. A giant eagle can fight while carrying a rider, but the rider cannot also attack unless he succeeds on a Ride check. Professional trainers charge 1,000 sestertii to rear or train a giant eagle. A light load for a giant eagle is up to 300 pounds; a medium load, 301–600 pounds; and a heavy load, 601–900 pounds. They can be extremely annoying to an early fortress due to their ability to fly over your fortress defences and kill your unarmed civilians.

Unlike other aerial pests, giant eagles will generally not path into your fortress, and usually only attack if provoked. They may also appear as mounts during a siege, resulting in a highly-manoeuvrable and dangerous squad of attackers. Captured giant eagles may be kept as exotic pets, requiring substantial time and effort to tame. Unfortunately, they cannot be trained to increase their combat effectiveness. Elven caravans may offer to trade tame giant eagles if the Elven civilization is situated in a mountainous area.

Trained Giant Owl:
Giant owls are nocturnal birds of prey, feared for their ability to hunt and attack in near silence. They are intelligent, and though naturally suspicious, sometimes associate with good creatures. A typical giant owl stands about 9 feet tall, has a wingspan of up to 20 feet, and resembles its smaller cousins in nearly every way except size. Though intelligent, a giant owl requires training before it can bear a rider in combat. To be trained, a giant owl must have a friendly attitude toward the trainer. Training a friendly giant owl requires six weeks of work. Riding a giant owl requires an exotic saddle. A giant owl can fight while carrying a rider, but the rider cannot also attack unless he or she succeeds on a Ride check. Professional trainers charge 1,000 sestertii to rear or train a

giant owl. A light load for a giant owl is up to 300 pounds; a medium load, 301-600 pounds; and a heavy load, 601-900 pounds.

Trained Giant Vulture:
Larger even than condors, giant vultures dwell only in regions where carrion is both large and plentiful. They also flock to regions torn by war, feasting on the dead with no concern for allegiance or race. Giant vultures rarely wait for wounded creatures to finish dying before they feed, and are much braver than most wild animals. A giant vulture, for example, wouldn't think twice about swooping down on a heavily armored column of soldiers just to snatch up a few wounded stragglers from the end of the line. A giant vulture stands more than 13 feet tall, has a wingspan of over 30 feet, and weighs 500 to 600 pounds. They are over four times the size of a dwarf and can be deadly to civilians who try to stop them during their thieving dives into your supplies (all while still causing lots of job cancellation spam). This makes them a real threat to a young savage embark, and if there are giant vultures in the region, the player should consider taking their food underground as soon as possible.

Like their small cousins, one can capture giant vultures with cage traps and train them into pets, who possess the standard high value of a giant creature. They are not any better than normal vultures when it comes to laying eggs, though they are comparably much better for a meat industry as they create a much higher quantity of meat, bones and fat. Giant vultures are also exotic mounts, so you may see elves riding them into battle in the event of a siege. Some dwarves like giant vultures for their patience.

Trained Griffons:
Are often nasty and bad-tempered. If captured when very young and trained, however, they can become fiercely loyal mounts. Their loyalty is non-transferable once fixed, so they must be disciplined and trained solely by the intended rider. The griffon must be trained and exercised by its owner on a fairly regular basis while it is a fledgling (up to age six months) in order to accustom it to his or her presence and the bridle, blanket, saddle, etc. When the griffon is half-grown a period of intensive training must begin, which will last at least four months.

The daily routine must never be broken for more than two days, or the griffon's wild nature will assert itself and all progress will be lost. After two months of this intensive training, it will be possible to begin to fly the griffon. This will be a period of training for mount and owner alike, as the rider must learn how to deal with a new dimension, and he will probably have no teacher but himself. Imagine the confusing tumult of giant wings, the rush of air, the sudden changes in altitude, and you will realize why an inexperienced rider absolutely cannot handle a flying mount.

Griffons, like all large flying creatures, eat enormous amounts of food, especially after prolonged aviation. Moreover, they are carnivores, and thus very expensive to feed. Care and keeping of a griffon will be a constant strain on the largest treasure hoard. Costs will probably run in the area of 300-600 sestertii per month. It will require special quarters, at

least three grooms and keepers, and occasionally an entire horse for dinner (diet will differ, but similar arrangements must be made for all flying mounts).

Trained Hippogriffs:
Are not so difficult to train as griffons, but neither are they as dependable in a pinch. A training process basically similar to that previously described will be necessary, though occasionally an animal trainer can substitute for the master for short periods if he is tied up elsewhere. Once broken, hippogriffs may possibly serve more than one master. They are omnivores, and thus somewhat less expensive to feed than griffons.

Trained Manticore:
The manticore is a true monster, with a leonine torso and legs, batlike wings, a man's head, a tail tipped with iron spikes, and an appetite for human flesh. The manticore stands 6 feet tall at the shoulder and measures 15 feet in length. It has a 25-foot wingspan. Each section of the manticore closely resembles the creature it imitates. The leonine torso has a tawny hide, the mane is a lion's brown-black colour, and the batlike wings are a dark brown with sparse hair. All manticores have heads that resemble human males; the mane resembles a heavy beard and long hair.

Manticore cubs can be caught and trained to assist evil humans. Such training is difficult and dangerous, especially since domesticated adults have an 80% chance of reverting to a wild state. Manticores will not allow themselves to be used as mounts. Wild adults may voluntarily ally themselves with evil humans, provided such allies can provide them with a steady, ample food supply.

Trained Pegasi:
Are greatly valued for their speed, which makes them virtually the fastest things in the air. Their training is a long process similar in many respects to that of griffons. They will serve only good charactersall others will find them totally intractable. Like griffons, their loyalty is given to only one master in a lifetime.

Land Type	Cost (sestertii)
Carriage Common	15,000
Cart Wood w/ Steel Axel, limit 250 lbs	3000
Cart Reinforced Steel, limit 4 tons	8000
Chariot	20,000
Coach, Ornamental	700,000
Sleigh Four Person	3000
Sleigh Two Person	2000
Wagon Closed	25,000
Wagon Open	15,000
Wagon or Cart Wheel	500

Carriage:
This four-wheeled vehicle can transport as many as four people within an enclosed cab, in addition to one driver and one other person seated next to the driver (often armed).

Cart:
This two-wheeled vehicle is often used to transport small loads of cargo from one settlement to another.

Chariot:
A two-wheeled vehicle drawn by a single horse (or other beast of burden). It comes with a harness. This two-wheeled vehicle is often used on the battlefield to break apart infantry formations or as a fast-moving fighting platform.

Coach:
A coach is a type of covered wagon used to carry passengers and goods inside. It is strongly sprung and generally drawn by four horses, usually four-in-hand. Widely used before the introduction of railway transport, it made regular trips between stages or stations, which were places of rest provided for coach travellers.

Sleigh:
A sled, sledge, or sleigh is a land vehicle with a smooth underside or possessing a separate body supported by two or more smooth, relatively narrow, longitudinal runners that travels by sliding across a surface. Most commonly sleds are used on snow or ice, however in certain cases they may be used on any surfaces, especially on ones with relatively low friction, such as sand or wet grass. They may be used to transport passengers, cargo, or both.

Wagon:
This is a four-wheeled, open vehicle for transporting heavy loads. In general, two horses (or other beasts of burden) draw it. It comes with the harness needed to pull it. This four-wheeled vehicle is used to transport large amounts of goods between communities, and is sometimes used by caravans.

Water Type	Cost (sestertii)
Barge	50,000
Canoe	3000
Caravel	1,000,000
Cog	100,0000
Currach	50,000
Dromon	1,500,000
Galleon	5,000,000
Galley	2,500,000
Grain Ship	4,000,000
Hemiola	110,0000
Hexareme	2,000,000
Junk	50,000
Kayak	4500
Keelboat	400,000
Knarr	300,000
The Liburna or Liberna and the Bireme	60,000

Water Type	Cost (sestertii)
Longship	1,000,000
Oar Common	200
Oar Galley	1000
Penteconter	40,000
Quadrireme	75,000
Quinquereme	2,500,000
Raft	4000
Rowboat	6000
Trireme	2,250,000

Barge:
A barge is a flat-bottomed boat, built mainly for river and canal transport of heavy goods. Some barges are not self-propelled and must be towed or pushed by towboats. Canal barges, towed by draft animals on an adjacent towpath, contended with the railway in the early Industrial Revolution, but were outcompeted in the carriage of high-value items due to the higher speed, falling costs and route flexibility of railways.

Canoe:
A canoe is a lightweight narrow boat, typically pointed at both ends and open on top, propelled by one or more seated or kneeling paddlers facing the direction of travel using a single-bladed paddle.

Caravel:
A light sailing ship with two or three masts and multiple decks, usable on the open ocean. Small lateen-rigged ships characterized by a high sterncastle, caravels are generally employed in cargo or fishing, but sometimes armed for raiding.

Cog:
A cog (or cog-built vessels) is a type of ship that first appeared in the 10th century, and was widely used from around the 12th century on. Cogs were generally built of oak, which was an abundant timber in the Baltic region of Prussia. This vessel was fitted with a single mast and a square-rigged single sail. These vessels were mostly associated with seagoing trade in medieval Europe, especially the Hanseatic League, particularly in the Baltic Sea region. The largest cog ships could carry up to about 200 tons.

Currach:
A currach is a type of Irish boat with a wooden frame, over which animal skins or hides were once stretched, though now canvas is more usual. It is sometimes anglicised as "Curragh". The construction and design of the currach are unique to the west coasts of Ireland and Scotland, with variations in size and shape by region.

Dromon:
A dromon was a type of galley and the most important warship of the Byzantine navy from the 5th to 12th centuries AD, when they were succeeded by Italian-style galleys. It was developed from the ancient liburnian, which was the mainstay of the Roman navy

during the Empire but differed in the adoption of a full deck, the abandonment of the rams on the bow in favour of an above-water spur, and the gradual introduction of lateen sails.

Galleon:
A galleon was a large, multi-decked sailing ship used as a armed cargo carrier primarily by European states during the age of sail from the 16th to 18th centuries and were the principle fleet units drafted for use as warships until the Anglo-Dutch wars of the mid-1600s. Galleons generally carried three or more masts with a lateen fore-and-aft rig on the rear masts, were carvel built with a prominent squared off raised stern, and used square-rigged sail plans on their fore-mast and main-masts. Such ships were the mainstay of maritime commerce into the early 19th century, and were often drafted into use as auxiliary naval war vessels—indeed, were the mainstay of contending fleets through most of the 150 years of the Age of Exploration — before the Anglo-Dutch wars begat purpose-built ship-rigged warships that thereafter dominated war at sea during the remainder of the Age of Sail.

Galley:
A three-masted ship with seventy oars on either side and a total crew of two hundred. This ship is 40 metres long and 6 metres wide, and it can carry up to 150 tons of cargo or 250 soldiers. For 8,000 00 more, it can be fitted with a ram and castles with firing platforms fore, aft, and amidships. This ship cannot make sea voyages and sticks to the coast. It moves about 4 miles per hour when being rowed or under sail.

Grain Ship:
The Alexandrian grain ship was a very large ship that operated on the Mediterranean during the Roman Empire around 150 AD, carrying grain from Egypt to Italy. It was 55 meters long and had a beam of 13.7 meters. Its cargo hold was 13.4 meters deep. It displaced 1200 short tons or 1,071 long tonnes.

Hemiolia:
The typical size of a Hemiolia was between 15 and 20 metres long, 4 metres wide. Like all the ships described here except the Penteconter, it was 'fenced', which means it had a deck above the banks of rowers. It was powered by 30 rowers, 15 per side, with a single mast and sail. This was a long, light vessel about which little is known – historians do not even know the arrangement of men and oars. The most likely configuration is that there were 10 oars on each side, with two rowers on the 3rd, 4th, 5th, 6th and 7th oars, giving the oars in the waist of the ship more power. Another less likely possibility is that the extra five men on each side had a second bank of oars above the others. The uses of the Hemiolia are unclear but it appears that it was too light for battle, so it is likely to have been a river patrol, scout or dispatch vessel.

Hexareme:
The typical size of a Hexareme was around 35 to 40 metres long, 5 to 7 metres wide, fenced. It was powered by three banks of rowers, 75 to 100 per side, with a single mast and sail. These ships are recorded at the battle of Actium on both sides. The name seems

to derive from the number of rowers at each oar position ('hex' signifying six). It is most likely that this class of ship was a trireme with two rowers on each oar. It is possible that some had fighting platforms or towers on the bow and stern, similar to a cog or carrack of the Middle Ages.

Junk:
This flat-bottomed sailing ship has two or three masts with junk-rigged sails, allowing it to be easily sailed by a small crew. Junks typically have a high poop deck and a flat bottom with no keel, and so rely on daggerboards, leeboards, or large rudders for stability. A junk's hull is divided into several watertight compartments, like a stalk of bamboo, which strengthen the hull and slow flooding. Junks are capable of ocean travel.

Kayak:
A kayak is a small, narrow watercraft which is propelled by means of a double-bladed paddle. The traditional kayak has a covered deck and one or more cockpits, each seating one paddler. The cockpit is sometimes covered by a spray deck that prevents the entry of water from waves or spray and makes it possible for suitably skilled kayakers to roll the kayak: that is, to capsize and right it without it filling with water or ejecting the paddler.

Keelboat:
A 15 to 23 metre long ship that is 4 to 6 metres wide and has a few oars to supplement its single mast with a square sail. It has a crew of eight to fifteen and can carry forty to fifty tons of cargo or one hundred soldiers. It can make sea voyages as well as sail down rivers (it has a flat bottom.).

Knarr:
Knarr is the Old Norse term for a type of ship built for long sea voyages and used during the Viking expansion. The knarr was a cargo ship; the hull was wider, deeper and shorter than a longship, and could take more cargo and be operated by smaller crews. They were built with a length of about 16 metres, a beam of 5 metres, and a hull capable of carrying up to 24 tons. It was primarily used to transport trading goods like walrus ivory, wool, timber, wheat, furs and pelts, armour, slaves, honey, and weapons. It was also used to supply food, drink, weapons and armour to warriors and traders along their journeys across the Baltic, the Mediterranean and other seas.

The Liburna or Liberna and the Bireme:
The typical size of the Liburna was between 25 and 30 metres long, 4.75 metres wide, fenced. Powered by single banks of rowers, 25 to 50 per side with single mast and sail, with an optional foremast and sail, the ship was almost always equipped with a ram. This vessel is likely to have taken its name from the Liburnians, a people from an area that corresponds with the Dalmatian coast and islands of modern Croatia. Before they became a Roman province, they were makers of a type of light fast ship favoured by pirates of the period, known as the liberna.

It was recorded that some of these vessels could navigate water only 1 metre deep. The Romans adapted this design for use in the river fleets due to the shallow draught. The

upper deck rails were extended (some were fitted with a partial roof as well) to provide the soldiers and crew protection from missile attack. In later years, the Liburna was further adapted by the addition of a second bank of rowers situated over the original first bank. This type of ship was known as a Bireme ('two-oar'). It would have also have had a compliment of between 30 and 60 marines.

Longship:
A ship with forty oars and a total crew of fifty. It has a single mast and a square sail. It can carry fifty tons of cargo or one hundred twenty soldiers. A longship can make sea voyages. It moves about 3 miles per hour when being rowed or under sail.

Penteconter:
The Penteconter was the most basic type of warship. It was typically 30 metres long and 4.5 metres wide. It was 'unfenced', which means that it had no deck, or only a partial one. The rowers sat on seats on the hull of the ship, and a walkway ran down the central line of the ship. It was powered by single banks of rowers, 25 per side with a single mast and sail. It developed over the years into a general purpose and scout vessel, used by both merchants and the navy. This was the original long ship, open to the elements.

Quadrireme:
The typical size of a Quadrireme was around 35 metres long, 6 to 7 metres wide, fenced. Powered by two banks of rowers, 30 to 40 per side with single mast and sail, this vessel would have also had a compliment of between 70 and 100 marines. It was used in the coastal fleets due to the shallow draught and its ability to be beached.

Quinquereme:
The typical size of a Quinquereme was around 40 metres long, 5 metres wide, fenced. Powered by three banks of rowers, 90 per side, the upper banks of oars would have had two rowers per oar. The ship was fitted with a main mast and foremast and was often rigged with two sails. The Quinquereme was very similar to the Trireme and also had a projecting gallery fitted to each side to house a third bank of rowers. The difference between the two types appears to be the numbers of rowers manning the oars. The top two banks of oars had two rowers on each oar, whilst the lowest bank had one man per oar. This gave five teams of rowers on three sets of oars, hence the name Quinquereme, meaning five-oared. This made sense as the bottom oars were shorter and lighter; the top banks were heavier due to their length and had further to move each stroke. The other advantage was increased speed and distance due to the additional manpower. This vessel would have had a compliment of between 100 and 140 marines.

Raft:
The most basic and primitive type of ship, a raft is a simple, flat boat with no hull, often made of logs lashed together, using two to four oars for propulsion. Rafts are not designed for ocean travel. A raft cannot carry any siege engines.

Rowboat:
A 3 to 4 metre long boat for two or three people using oars.

Trireme:
The Trireme had a projecting gallery fitted to each side to house a third bank of rowers - the name Trireme means three-oared. In ships with multiple banks of rowers, the rowers were housed in several projecting galleries. If viewed from the bow, this gave the ship an appearance similar to a two- or three-storey Tudor house (where the upper storeys project beyond the lower ones).

Table 3: Freight and Travel Costs

Cart	15 sestertii per kilometre per 90 kgs, max 1/2 ton
Coach Cab	3 sestertii per kilometre
Messenger	2 sestertii per kilometre
Road or Gate Toll	1 sestertii
Ship's Passage	10 sestertii per kilometre
Skyship's Passage	40 sestertii per kilometre
Sled	20 sestertii per kilometre per 135 kgs, max 1 ton
Teleportation	Begins at 1000 sestertii per kilometre
Wagon	35 sestertii per kilometre per 180 kgs, max 2 tons

Coach Cab:
The price listed is for a ride in a coach that transports people (and light cargo) between towns. For a ride in a cab that transports passengers within a city, 1cp usually takes a character anywhere they need to go.

Messenger:
This entry includes horse-riding messengers and runners. Those willing to carry a message to a place they were going anyway (a crew member on a ship, for example) may ask for half the listed amount.

Road or Gate Toll:
A toll is sometimes charged to cross a well-trodden, well-kept, and well-guarded road to pay for patrols on it and its upkeep. Occasionally, large, walled cities charge a toll to enter or exit the city (sometimes just to enter the city).

Ship's Passage:
Most ships do not specialize in passengers, but many have the capability to take a few along when transporting cargo.

Teleportation:
The cost to be teleported is based on caster level, although the customer will have to pay double because the caster will need to teleport herself back. Further, some casters will charge as much as double to teleport into a dangerous area.

Weapons

Melee and Ranged Weapons

Melee weapons are used for making melee attacks, though some of them can be thrown as well. Ranged weapons are thrown weapons or projectile weapons that are not effective in melee. Apply a character's Strength bonus to damage dealt by thrown weapons but not to damage dealt by projectile weapons (except for mighty composite shortbows or longbows).

One-Handed

If the weapon's size category is the same as a character's, then the weapon is one-handed for that character. If a one-handed melee weapon is used two-handed, apply one and a half times the character's Strength bonus to damage (provided the character has a bonus).

Two-Handed

If the weapon's size category is one step larger than a character's, then the weapon is two-handed for that character. A two-handed melee weapon can be used effectively in two hands, and when damage is dealt with it, add one and a half times the character's Strength bonus to damage (provided the character has a bonus).

Thrown

Thrown weapons can only be thrown one-handed. A character can throw a thrown weapon with one hand even if it would be two-handed for you due to the character's size, but doing so counts as a full-round action because the weapon is bulkier and harder to handle than most thrown weapons. Add the character's Strength bonus to damage.

A character can use a two-handed projectile weapon (such as a bow or a crossbow) effectively in two hands. If the character has a penalty for low Strength, apply it to damage rolls when you use a bow or a sling. Add no Strength bonus to damage with a projectile weapon unless the weapon is a mighty composite shortbow or longbow.

Too Large to Use

If the weapon's size category is two or more steps larger than a character's own, the weapon is too large for the character to use.

Unarmed Strikes

An unarmed strike is two size categories smaller than the character using it.

Weapon Cost Table 1: (sorted by weapon types)

Axe Type	Damage	Weight	Range	Cost (sestertii)
Axe, Battle	D8	7	-	500
Axe, Fu	D8	7	-	600
Axe, Great	D12	12	-	2000
Axe, Hand/Throwing	D6	4	-	100
Pick	D6	4	-	400

Blade Long Type	Damage	Weight	Range	Cost (sestertii)
Sword, Bagua Dao	D12	10	-	5000
Sword, Bastard	D8	4	-	2500
Sword, Broad	2D4	3	-	1000
Sword, Claymore	D10	6	-	2500
Sword, Cutlass	D6	3	-	1200
Sword, Dao	D10	6	-	3000
Sword, Giau Tzu Jen	D12	8	-	4000
Sword, Jian	D10	8	-	3500
Sword, Katana	D12	6	-	4000
Sword, Khopesh	D10	6	-	1000
Sword, Long	D8	4	-	1500
Sword, Rapier	D6	3	-	1500
Sword, Sabre	2D4	3	-	1700
Sword, Scimitar	D8	4	-	1500
Sword, Shamshir	D8	5	-	2000
Sword, Two Handed	D10	4	-	5000
Sword, Wakizashi	D8	3	-	3000

Blade Short Type	Damage	Weight	Range	Cost (sestertii)
Bagh Nakh	D6	-	-	40
Bat Cham Do Knives	D4	1	-	200
Dagger or Dirk	D4	1	-	200
Emei Ci (stingers)	D4	1	-	100
Jitte	D4	2	-	100
Kama (Sickle)	D6	3	-	100
Knife or Stiletto	D4	1	-	200
Knife, Biau Dau Throwing	D6	1	-	100
Knife, Da Kan Dau Butterfly	D6	1	-	200
Knife, Pahi	D6	1	-	100
Lu Jiao Dao Knives	D6	8	-	200
Machete	D6	5	-	800
Parang	D8	5	-	100
Sai	D4	2	-	100
Sickle	D6	3	-	60
Sword, Drusus	D6+1	3	-	1200
Sword, Falchion	2D4	16	-	1700
Sword, Kodachi	D6+1	3	-	1000
Sword, Kris	D10	6	-	1500
Sword, Short	D6	3	-	1000
Sword, Shoto	D6+1	3	-	1000
Tanto	D4	1	-	1000
Zhou Dao Knives	D4	1	-	2000

Bow Type	Damage	Weight	Range	Cost (sestertii)
Arrow Flight	D6	-	-	30 per 12
Arrow Sheaf	2D6	-	-	30 per 6
Bow, Composite Long	-	3	110 ft	1000
Bow, Composite Short	-	2	70 ft	7500
Bow, Daikyu	-	3	100 ft	7000
Bow, Long	-	3	100 ft	7500
Bow, Short	-	2	60 ft	3000
Crossbow, Er Neu Repeating	-	3	30 ft	50,000
Crossbow, Hand	-	3	30 ft	30,000
Crossbow, Heavy	-	9	120 ft	5000
Crossbow, Light	-	6	80 ft	3600
Quarrel, Hand	D4	-	-	100
Quarrel, Heavy	D8	-	-	20
Quarrel, Light	D6	-	-	10

Chain Type	Damage	Weight	Range	Cost (sestertii)
Chain	D8	5	-	50
Kawanga (Grapple + Rope)	D3	4	-	200
Kusari-Gama (Sickle + Chain)	D6	3	-	200
Kusari Fundo	D10	9	-	200
Kyoketsu-Shoge	D4	2	-	200
Manriki-Gusari	D8	8	-	400
Nunchaku	D6	2	-	200
Nunchaku, Shan Gieh Kun	D10	4	-	400
San Jie Gun	D6	4	-	400
Shinobi-Zue	D10	8	-	400

Club Type	Damage	Weight	Range	Cost (sestertii)
Belaying Pin	D3	3	-	2
Club	D6	3	-	-
La'au Palau	D6	3	-	200
Mace	D8	6	-	500
Maul	D10	4	-	400
Morning Star	D8	12	-	1000
Sword, Bokken wooden	D8	3	-	500
Tonfa	D6	3	-	80
War Hammer	D8	4	-	200

Flail Type	Damage	Weight	Range	Cost (sestertii)
Flail, Footman's	D8	5	-	1500
Flail, Horseman's	D6	4	-	800
Flail, Shao Tzu	D8	4	-	1000
Scourge	D8	2	-	500

Lance Type	Damage	Weight	Range	Cost (sestertii)
Lance, Heavy	2D4 +1	10	-	1500
Lance, Jousting	D4	3	-	2000
Lance, Light	D6	5	-	600
Lance, Medium	D8	7	-	1000

Polearm Type	Damage	Weight	Range	Cost (sestertii)
Awl Pike	2D6	6	-	500
Ba Tou	D6	5	-	400
Berdiche	3D6	7	-	700
Bisento	2D6	15	-	600
Chigiriki	D6	6	-	400
Guisarme	2D4	15	-	500
Halberd	D10	15	-	1000
Fauchard	D6	15	-	500
Fauchard-Fork	D8	15	-	800
Glaive	D6	15	-	600
Guandao	D8	15	-	2000
Hook Fauchard	D6	15	-	1000
Jutte	D6	2	-	2000
Ko'oko'o	D6	7	-	500
Lucern Hammer	2D4	6	-	700
Luk Dim Boon Gwun	D8	6	-	2000
Mancatcher	2	5	-	3000
Military Fork	D8	5	-	500
Nagimaki	D6	10	-	2000
Naginta	D10	12	-	800
Pâhoa Ko'oko'o	D8	5	-	2000
Ranseur	2D4	15	-	600
Scythe	2D4	12	-	1800
Spetum	D8	10	-	500
Staff, Bo	D6	6	-	5
Staff, Giau Chiz	2D4	8	-	2000
Staff, Quarter	D6	4	-	100
Staff, Sling	D6	8	18 ft	20
Voulge	2D4	5	-	500
Yagara Mogara	D10	15	-	2000

Spear Type	Damage	Weight	Range	Cost (sestertii)
Fei Cha	D8	15	-	2000
Harpoon	2D6	5	-	2000
Hoe Lei-o-mano	D6	2	-	5000
Javelin	D6	2	-	50
Pilum	D10	5	-	100
Spear	D8	5	-	80
Spear, Chiang	2D6	5	-	2000

Spear Type	Damage	Weight	Range	Cost (sestertii)
Spear, Ihe	D8	5	-	2000
Trident	D8	4	-	1500
Trident, 9 Dragon	3D6+1	5	-	5000
Yari	D10	11	-	2000

Thrown Type	Damage	Weight	Range	Cost (sestertii)
Blowgun	-	1	20 ft	300
Blowgun Needle	1	-	-	2
Bolas	D4	2	-	50
Boomerang	D4	1	-	5
Caltrop	1	-	-	20 per 10
Chakram	D4	1	-	80
Dart Barbed	D3	-	-	10
Dart, Shen Biau	D6	1	-	20
Katar	D1	1	-	200
Net	-	-	-	500
Shuriken	D4	-	-	100
Sling	-	-	40 ft	5
Sling Bullet	D4	-	-	1

Misc Type	Damage	Weight	Range	Cost (sestertii)
Cestus	D6	2	-	100
Gaff/Hook	D3	1	-	5
Lasso	-	1	-	50
Whip	D3	3	-	10
Whip, Bian	D8	6	-	500

The cost includes miscellaneous gear that goes with the weapon, such as a scabbard for a sword or a quiver for arrows.

2. Equipment during the Pulp era

A small sample of prices of equipment available in the 1930s.

Men's Clothing	**Cost**
Corduroy Suit	$10
Cuff Links	40c
Fur Cap	$17
Golf Cap	$2
Leather Work Shoes	$5
Lace Breeches	$5
Overcoat	$20
Sweater	$7
Tailored Silk Suit	$75
Tie	$3.50

Women's Clothing	Cost
Corset	$5
Designer Dress	$90
Frock	$16.50
Fur Coat	$198
Leather Slippers	$3.50
Negligee	$7
Parisian Shoes	$4.50
Silk Handbag	$5
Silk Hose	$2.50
Sweater	$9.50
Turban Hat	$3.50
Velour Hat	$4.50

Communication	Cost
Console Radio	$50
Desk Phone	$15
Telegraph	$4.25
Newspaper	5c

Entertainment	Cost
Banjo	$10
Saxophone	$64
Phonograph	$45
Records	39c
Movie Camera	$89
Movie Projector	$54
Box Camera	$2.30
24 Film for camera	38c
Developer Kit	$4.95

Medical	Cost
Bed pan	$2.48
Crutches	$1.69
Forceps	$3.60
Gauze Bandage (9 metres)	39c
Hypodermic Syringe	$12.50
Medical Case	$10.45
Scalpel Set	$1.40
Thermometre	$1.39
Wheelchair	$33.30

Miscellaneous	Cost
250 power microscope	$11.98
Can of soft drink	5c
Dictionary	$6.75

Miscellaneous	Cost
Diving gear	$1200
Encyclopaedia set	$49.00
Fountain pen	$1.25
Gold pocket watch	$32.50
Makeup kit	$4.98
Pack of cigarettes	10c
Playing cards	75c
Typewriter	$40
Umbrella	$1.79
University per semester	$480
Watch	$5.95

Outdoors	Cost
2 x 2 metre tent	$11.25
3.6 x 4.8 metre tent	$24.85
4.8 x 7.2 metre tent	$55.45
7.2 x 10.8 metre tarpaulin	$39.35
Binoculars	$28
Camp Stove	$5.85
Canteen (5 litres)	$1.69
Compass	$2.45
Cooking Kit	$8.48
Fishing Tackle	$16
Folding Bathtub	$6.45
Folding Camp Bed	$5.95
Gasoline Lantern	$6.59
Hand Axe	$1.59
Hemp Twine (2 rolls)	27c
Hunting Knife	$2.65
Lamp	$2.59
Pocket Knife	$1.98
Searchlight	$5.95
Small Animal Trap	$2.48
Spring Animal Trap	$5.98
Water Bag (2½ litres)	89c
Waterproof Blanket	$1.79

Tools	Cost
7.5 metre ladder	$3.20
15 metre rope	$8.60
Chain (per 30cms)	65c
Crowbar	$2.25
Hand drill & bits	$5.98
Handsaw	$2.80
Gasoline Blowtorch	$4.45

Tools	Cost
Padlock	95c
Pulley	$1.75
Tool Kit	$12.90

Transport	Cost
American Austin	$320
Buick	$1400
Chevrolet	$600

Transport	Cost
Ford Model A	$290
Ford Model T	$385
Hot air balloon (4 man)	$1800
Mercedes Benz	$8000
Motorcycle	$95
Studebaker	$350
Stuz Bearcat	$280

Accessories	Cost
Battery	$8.35
Headlamp	$3.95
Radiator	$8.69
Tire	$10.95
Wrench set	$6.95

Travel	Cost
Bag (4.5kgs)	$7.45
Suitcase (9kgs)	$9.95
Steamer Trunk (25kgs)	$13.95
Wardrobe (50kgs)	$41.95
Airline ticket (per 16 miles)	$2
International airline ticket (per 160 kms)	$18
Bus fare	5c
Sea fare 1st class 1 way	$120
Sea fare 1st class round trip	$200
Sea fare economy	$35
Taxi fare	10c
Train fare per 80 kms	$1

Hand to Hand Weapons	Cost	Damage
Axe	$5	D6
Boomerang	$2	D6
Bullwhip	$5	D8
Garrote	50c	D6
Knife	$2	D6

Hand to Hand Weapons	Cost	Damage
Nightstick	$3	D4
Rapier	$20	D6
Sabre	$30	D6
Spear	$1	D6

Handguns	Cost	Year	Damage	Range	Ammo
Beretta M1934 9mm	$30	1935	2D6	50 metres	7
Bodeo M1889 9mm Revolver	$25	1889	2D6	40 metres	6
Browning FN No.2 9mm	$30	1935	2D6	50 metres	13
Glisenti M1910 9mm	$35	1905	2D6	40 metres	7
Lebel M1892 8mm Revolver	$25	1892	2D6	40 metres	6
M1911A1 .45	$40	1922	2D6	50 metres	7
MAS M1935A 7.65mm	$20	1937	2D6	50 metres	8
Mauser Model 1932 7.63mm	$40	1932	2D6	40 metres	20
Meiji 26 9mm Revolver	$20	1893	2D6	40 metres	6
Model 35P 9mm	$35	1935	2D6	50 metres	8
Nagant Model 1895 7.62 Revolver	$30	1895	2D6	40 metres	7
No.2 Enfield .38 Revolver	$15	1932	2D6	50 metres	6
PO8 Parabellum Luger 9mm	$75	1908	2D6	50 metres	8
Smith & Wesson .38 Revolver	$20	1940	2D6	60 metres	6
Steyr 1912 9mm	$30	1911	2D6	50 metres	8
Taisho 04 Nambu 8mm	$20	1909	2D6	40 metres	8
Taisho 14 Nambu 8mm	$25	1925	2D6	50 metres	8
Tokarev TT33 7.62	$20	1933	2D6	50 metres	8
Type 94 8mm	$20	1934	2D6	50 metres	6
Walther Model 38 9mm	$25	1938	2D6	40 metres	8
Webley Mk 4 .38 Revolver	$25	1942	2D6	60 metres	6

Rifles	Cost	Year	Damage	Range	Ammo
FG42/FJ642 7.92mm	$60	1942	3D6	300 metres	20
Gewehr 41 7.92mm	$55	1937	3D6	400 metres	10
Gewehr 43 7.92mm	$50	1943	3D6	400 metres	10
Karabiner 98K 7.92mm	$60	1935	3D6	300 metres	5
M1 Garand .30	$40	1936	3D6	300 metres	20
M1 US .30	$35	1940	3D6	300 metres	15
M1903 .30	$35	1905	3D6	300 metres	5
M1917 .30	$25	1940	3D6	400 metres	5
M1918A2 .30	$35	1918	3D6	200 metres	20
M1941 .30	$30	1936	3D6	300 metres	10
M2 .30	$25	1944	3D6	200 metres	30
M3 .30	$35	1945	3D6	200 metres	5
Maschinenpistole 43 7.92mm	$50	1942	3D6	300 metres	30
Meiji 38 6.5mm	$45	1930	3D6	200 metres	5
Model 1930G 7.62mm	$45	1930	3D6	300 metres	5
Modello 91 6.5mm	$40	1938	3D6	350 metres	6

Rifles	Cost	Year	Damage	Range	Ammo
Rifle No.4 .303	$25	1939	3D6	400 metres	10
Tokarev SVT40 7.62mm	$50	1938	3D6	350 metres	10

Submachine Guns	Cost	Year	Damage	Range	Ammo
Austen 9mm	$70	1941	2D6	150 metres	28
Beretta Model 1918 9mm	$120	1918	2D6	75 metres	25
Beretta Model 1938A 9mm	$100	1938	2D6	100 metres	10
FNAB43 9mm	$130	1943	2D6	150 metres	20
M3 .45	$120	1942	3D6	75 metres	30
Maschinenpistole 28 9mm	$90	1920	2D6	75 metres	20
Maschinenpistole 34 9mm	$90	1934	2D6	100 metres	20
Maschinenpistole 38 9mm	$110	1938	2D6	75 metres	32
Maschinenpistole EMP 9mm	$90	1930	2D6	100 metres	25
Model 39M 9mm	$70	1939	2D6	100 metres	40
OVP 9mm	$60	1915	2D6	75 metres	25
Owen 9mm	$110	1941	2D6	150 metres	33
PPD 1940G 7.62	$130	1940	2D6	150 metres	25
PPSh 1941G 7.62	$80	1940	2D6	150 metres	35
PPS42 7.62	$110	1941	2D6	150 metres	35
Reising Model 50 .45	$130	1940	2D6	150 metres	12
Solothurn S1-100 9mm	$130	1929	2D6	75 metres	32
Sten Mk2 9mm	$90	1941	2D6	75 metres	32
Suomi 1931 9mm	$100	1932	2D6	75 metres	20
TZ-45 9mm	$120	1944	2D6	150 metres	40
Thompson M1928 .45	$110	1927	3D6	75 metres	20
Type 100 8mm	$100	1941	2D6	150 metres	30
ZK383 9mm	$100	1933	2D6	75 metres	30

Machine Guns	Cost	Year	Damage	Range	Ammo
Breda 1930 6.5mm	$200	1917	5D6	200 metres	20
Breda 1937 8mm	$220	1938	5D6	400 metres	20
Bren .303	$210	1938	5D6	150 metres	30
Browning M1917A1 .30	$220	1910	5D6	300 metres	250 belt
Chatellerault 7.5mm	$220	1938	5D6	400 metres	25
DP1928 7.62mm	$210	1928	5D6	150 metres	47
Dshk 12.7mm	$200	1934	5D6	300 metres	50 belt
Fiat Revelli 1914 6.5mm	$240	1914	5D6	200 metres	50
Fiat Revelli 1935 8mm	$220	1935	5D6	400 metres	20
Goryunov SG43 7.62mm	$250	1943	5D6	250 metres	100 belt
Johnson M1941 .30	$230	1935	5D6	400 metres	20
Knorr Bremse MG35	$240	1932	5D6	250 metres	50 belt
Lahti Saloranta 7.62mm	$200	1934	5D6	400 metres	20
Madsen 7.92mm	$220	1940	5D6	400 metres	25
Maschinengewehr 15	$220	1932	5D6	400 metres	50
Maschinengewehr 34	$230	1930	5D6	200 metres	50

Machine Guns	Cost	Year	Damage	Range	Ammo
Maschinengewehr 42	$235	1942	5D6	1000 metres	50 or 250 belt
Maxim1910 7.62mm	$200	1905	5D6	200 metres	250 belt
Schwarzlose Model12	$200	1900	5D6	200 metres	100 belt
Taisho 11 6.5mm	$240	1922	5D6	200 metres	30
Type 92 7.7mm	$290	1932	5D6	400 metres	30
Type 96 6.5mm	$280	1936	5D6	400 metres	30
Type 99 7.7mm	$270	1932	5D6	400 metres	30
Vickers LMG .303	$300	1925	5D6	250 metres	250
Vickers Mk1 .303	$310	1912	5D6	300 metres	250 belt
VZ37 7.92mm	$280	1937	5D6	300 metres	250 belt

Shotguns	Cost	Year	Damage	Range	Ammo
Browning Auto-5	$35	1890	4D5	30 metres	4
Ithaca Autoburglar	$40	1920	4D6	40 metres	4
Savage 311-R	$30	1920	4D6	40 metres	2
Winchester M1897	$40	1897	4D6	30 metres	5
Winchester M1901	$35	1901	4D6	30 metres	4

Explosives and Heavy	Cost	Year	Damage	Range
75mm Antitank gun	-	1916	10D10	75 metres
Artillery	-	1897	10D10	45 metres
Dynamite	$2	1867	6D6	3.6 metre radius
Flamethrower	-	1901	5D10	20 metres
Flare Gun	$15	1920	1	25 metres
Grenade	-	1914	5D6	4.5 metre radius
Molatov Cocktail	N/a	1939	2D6	3.6 metre radius
Mortar	-	1915	10D10	30 metre radius

If no cost is shown then it is not available to the public.

3. Weapons during the Modern era

I have attempted to look at as many prices as possible although in most cases there were quite large variations. So I took the lowest and highest prices and then worked out an average. Please feel free to modify prices for your own campaign.

Hand to Hand Weapons	Cost	Damage
Axe	$35	D6
Boomerang	$30	D6
Bullwhip	$50	D8
Garrote	$5	D6
Knife	$20	D6
Nightstick	$30	D4
Rapier	$200	D6
Sabre	$300	D6
Spear	$10	D6

Handguns	Cost	Damage	Range (metres)	Ammo
AMT .380	$330	2D6	23	5
AMT .45	$450	2D6	23	5
AMT Automag	$1000	2D6	50	8
AMT Automag III	$800	2D6	50	9
AMT Automag IV	$700	2D6	50	8
AMT Automag V	$700	2D6	50	6
Beretta Cougar	$630	2D6	50	11
Beretta M1934 9mm	$198	2D6	50	7
Beretta M92	$630	2D6	50	16
Bodeo M1889 9mm Revolver	$250	2D6	40	6
Browning BDM	$570	2D6	50	16
Browning FN No.2 9mm	$60	2D6	50	13
Browning HP35	$500	2D6	50	14
Colt .38	$408	2D6	21	6
Colt Anaconda	$629	2D6	46	6
Colt Delta	$560	2D6	50	9
Colt Double Eagle	$560	2D6	50	9
Colt King Cobra	$468	2D6	46	6
Colt M1911A1	$560	2D6	50	8
Colt Python	$929	2D6	46	6
Coonan .357	$720	2D6	50	9
Coonan .41	$820	2D6	50	8
CZ75	$540	2D6	50	16
CZ97B	$640	2D6	50	11
CZ100	$389	2D6	50	14
Daewoo DP51	$800	2D6	50	14
Derringer 38	$305	2D6	15	2
EEA Witness	$350	2D6	50	17
Fabrique 57	$585	2D6	50	21
Freedom Arms Casull	$1300	2D6	90	5
Glisenti M1910 9mm	$400	2D6	40	7
Glock 17/18/19	$620	2D6	50	18
Glock 20/21	$670	2D6	50	16
Glock 22/23	$620	2D6	50	16
Glock 24	$650	2D6	50	16
Glock 25/28	$620	2D6	50	16
Glock 26/27	$620	2D6	50	11
Glock 29/30	$670	2D6	50	13
Glock 31/32	$620	2D6	50	16
Glock 33	$620	2D6	50	10
Glock 34/35	$690	2D6	50	18
Glock 36	$670	2D6	50	11
Gyurza	$580	2D6	50	18
HK P7M8	$1120	2D6	50	9
HK Socom	$2700	2D6	50	13

Handguns	Cost	Damage	Range (metres)	Ammo
HK SP89	$845	2D6	50	15
HK USP	$800	2D6	50	16
HK USP Compact	$800	2D6	50	14
HK USP Expert	$800	2D6	50	16
IMI Jericho 941	$570	2D6	50	11
Intratech Tec9	$400	2D6	50	20
Kahr K9	$550	2D6	50	8
Kareen Mk II	$430	2D6	50	14
Keltech P11	$310	2D6	50	11
Lebel M1892 8mm Revolver	$250	2D6	40	6
Lorcin L9MM	$189	2D6	50	11
M1911A1 .45	$245	2D6	50	7
Magnum Desert Eagle	$980	2D6	50	10
Magnum Lone Eagle	$320	2D6	50	1
MAS M1935A 7.65mm	$400	2D6	258	8
Mateba Model 6	$1000	2D6	60	6
Mauser Model 1932 7.63mm	$320	2D6	40	20
Medusa Model 47	$899	2D6	46	6
Meiji 26 9mm Revolver	$250	2D6	40	6
Model 35P 9mm	$165	2D6	50	8
Nagant Model 1895 7.62 Revolver	$2000	2D6	40	7
No.2 Enfield .38 Revolver	$290	2D6	50	6
Olympic OA98	$990	2D6	132	11
Para-Ordnance LDA	$1049	2D6	50	15
PM Makarov	$230	2D6	50	6
PO8 Parabellum Luger 9mm	$700	2D6	50	8
Ruger GP100	$440	2D6	46	6
Ruger P89	$430	2D6	50	16
Ruger P90	$500	2D6	50	8
Ruger P93	$500	2D6	50	16
Ruger P94	$520	2D6	50	16
Ruger P95	$380	2D6	50	14
Ruger P97	$460	2D6	50	9
Ruger SP101	$458	2D6	21	6
Ruger Redhawk	$560	2D6	90	6
Ruger Redhawk Super	$618	2D6	90	6
Sig P210	$2100	2D6	50	9
Sig P220	$750	2D6	50	10
Sig P226	$750	2D6	50	16
Sig P228	$750	2D6	50	14
Sig P229	$500	2D6	50	13
Sig P232	$500	2D6	50	9
Sig P239	$458	2D6	50	9
Sig Pro	$570	2D6	50	13
Smith & Wesson .38 Revolver	$675	2D6	60	6

Handguns	Cost	Damage	Range (metres)	Ammo
Smith & Wesson 410	$490	2D6	50	11
Smith & Wesson 457	$490	2D6	50	8
Smith & Wesson 908/910	$445	2D6	50	6
Smith & Wesson 3913	$650	2D6	50	6
Smith & Wesson 4006	$760	2D6	50	11
Smith & Wesson 4053	$735	2D6	50	9
Smith & Wesson 4506	$790	2D6	50	6
Smith & Wesson 4516	$790	2D6	50	8
Smith & Wesson 4566	$790	2D6	50	6
Smith & Wesson 5903	$700	2D6	50	16
Smith & Wesson 6904	$635	2D6	50	13
Smith & Wesson Model 13/15	$400	2D6	46	6
Smith & Wesson Model 19/66	$423	2D6	46	6
Smith & Wesson Model 29/629	$600	2D6	46	6
Smith & Wesson Model 60/60LS	$440	2D6	46	5
Smith & Wesson Model 500	$960	2D6	91	5
Smith & Wesson Model 625	$610	2D6	46	5
Smith & Wesson Model 686	$510	2D6	46	5
Smith & Wesson Sigma	$400	2D6	50	17
Smith & Wesson SW99	$450	2D6	50	17
Springfield XD	$490	2D6	50	16
Star Firestar	$500	2D6	50	8
Star Firestar 243	$500	2D6	50	14
Star M31	$400	2D6	50	17
Star Megastar	$650	2D6	50	18
Star Starlite	$260	2D6	50	17
Steyr 1912 9mm	$625	2D6	50	8
Taisho 04 Nambu 8mm	$490	2D6	40	8
Taisho 14 Nambu 8mm	$490	2D6	50	8
Taurus 44	$450	2D6	90	6
Taurus 605	$300	2D6	96	5
Taurus PT 111/140	$410	2D6	50	11
Taurus PT 22	$203	2D6	50	9
Taurus PT 908/957	$410	2D6	50	11
Taurus PT 92/99	$490	2D6	50	16
Taurus PT 945	$470	2D6	50	6
Taurus Raging Bull	$699	2D6	90	6
Tokarev TT33 7.62	$100	2D6	50	8
Type 26	$600	2D6	46	6
Type 94 8mm	$320	2D6	50	6
TZ99	$350	2D6	50	16
Vektor CP1	$350	2D6	50	14
Vektor SP1/2	$350	2D6	50	16
Walther Model 38 9mm	$230	2D6	40	8
Walther P38	$700	2D6	50	10

Handguns	Cost	Damage	Range (metres)	Ammo
Walther P88C	$900	2D6	50	14
Walther P99	$800	2D6	50	16
Walther PP/PPK	$540	2D6	50	8
Webley Mk 4 .38 Revolver	$475	2D6	60	6
Webley Mk 5	$480	2D6	60	6
Welrod Silencer	$450	2D6	12	6
Wildey	$1300	2D6	50	8

Rifles	Cost	Damage	Range (metres)	Ammo
AN 94	$900	3D6	400	30
Armalite AR10	$800	3D6	539	30
Bushmaster M17S	$575	3D6	400	30
Enfield I85a1	$1300	3D6	400	30
FAMAS	$800	3D6	400	25
FN FAL	$1200	3D6	300	20
FN FNC	$1200	3D6	539	20
FG42/FJ642 7.92mm	$700	3D6	400	20
Gewehr 41 7.92mm	$900	3D6	400	10
Gewehr 43 7.92mm	$900	3D6	400	10
HK G11	$1100	3D6	300	50
HK G36	$1200	3D6	400	30
HK SLB2000	$1500	3D6	660	10
Howa 64	$2000	3D6	400	20
Howa 89	$3000	3D6	500	30
IMI Kalil	$1500	3D6	300	50
IMI TAR21	$1000	3D6	300	30
Kalashnikov AK47	$400	3D6	300	30
Kalashnikov AK74	$400	3D6	500	30
Karabiner 98K	$700	3D6	300	5
Keltec SU16	$640	3D6	366	30
M1 Garand .30	$1100	3D6	539	20
M1 US .30	$400	3D6	300	15
M14	$1200	3D6	539	20
M16	$800	3D6	400	20
M1903 .30	$1600	3D6	300	5
M1917 .30	$1700	3D6	400	5
M1918A2 .30	$1800	3D6	200	20
M1941 .30	$2000	3D6	300	10
M2 .30	$1600	3D6	200	30
M3 .30	$1700	3D6	200	5
Maschinenpistole 43	$900	3D6	300	30
Meiji 38 6.5mm	$700	3D6	200	5
Model 1930G	$950	3D6	300	5
Modello 91 6.5mm	$670	3D6	350	6
Objective CW	$1200	3D6	500	30

Rifles	Cost	Damage	Range (metres)	Ammo
Rifle No.4 .303	$400	3D6	400	10
Ruger Mini 14	$620	3D6	366	20
SIG SG 550	$3000	3D6	400	30
Siminov SL	$200	3D6	300	30
Steyr AUG	$4000	3D6	457	30
Tokarev SVT40	$400	3D6	350	10
Vektor CR21	$800	3D6	400	35

Submachine Guns	Cost	Damage	Range (metres)	Ammo
Ares FMG	$2500	2D6	76	20
Austen 9mm	$900	2D6	150	28
Beretta M93R	$1200	2D6	50	20
Beretta Model 1918 9mm	$1500	2D6	75	25
Beretta Model 1938A 9mm	$1800	2D6	100	10
Bison 2	$950	2D6	100	67
Calico M950	$1400	2D6	76	50
Colt Scamp	$1000	2D6	45	27
Fabrique P90	$1200	2D6	200	50
FNAB43 9mm	$1000	2D6	150	20
HK MP5	$1200	2D6	90	30
HK PWD	$1500	2D6	150	40
HK UMP45	$1500	2D6	75	25
IMI Mini Uzi	$4800	2D6	75	32
IMI Standard Uzi	$3295	2D6	75	32
Kel-Tec Sub9/40	$700	2D6	90	33
IMI Standard Uzi	$3295	2D6	75	32
M3 .45	$800	3D6	75	30
MAC 10	$800	2D6	75	30
MAC 11	$1600	2D6	75	32
Maschinenpistole 28 9mm	$700	2D6	75	20
Maschinenpistole 34 9mm	$800	2D6	100	20
Maschinenpistole 38 9mm	$900	2D6	75	32
Maschinenpistole EMP	$950	2D6	100	25
Milkor BXP	$600	2D6	75	32
Model 39M 9mm	$700	2D6	100	40
OVP 9mm	$650	2D6	75	25
Owen 9mm	$800	2D6	150	33
PP90	$600	2D6	75	32
PPD 1940G 7.62	$900	2D6	150	25
PPSh 1941G 7.62	$800	2D6	150	35
PPS42 7.62	$550	2D6	150	35
QCW05	$1200	2D6	200	30
Reising Model 50 .45	$700	2D6	150	12
Ruger MP9	$600	2D6	75	32
Shpagin PPSh 41	$2000	2D6	75	35

Submachine Guns	Cost	Damage	Range (metres)	Ammo
Sites Spectre	$850	2D6	75	30
Skorpion	$300	2D6	25	20
Solothurn S1-100 9mm	$600	2D6	75	32
Sten Mk2 9mm	$560	2D6	75	32
Sterling L2A3	$750	2D6	75	34
Steyr TMP	$900	2D6	75	30
Suomi 1931 9mm	$850	2D6	75	20
TZ-45 9mm	$820	2D6	150	40
Thompson M1928 .45	$700	3D6	75	20
Type 100 8mm	$600	2D6	150	30
ZK383 9mm	$800	2D6	75	30

Machine Guns	Cost	Damage	Range (metres)	Ammo
Breda 1930 6.5mm	$1000	5D6	200	20
Breda 1937 8mm	$1200	5D6	400	20
Bren .303	$1300	5D6	150	30
Browning M1917A1 .30	$1000	5D6	300	250 belt
Chatellerault 7.5mm	$1100	5D6	400	25
DP1928 7.62mm	$1300	5D6	150	47
Dshk 12.7mm	$1400	5D6	300	50 belt
Fabrique MAG58	$2495	5D6	660	100
Fiat Revelli 1914 6.5mm	$1000	5D6	200	50
Fiat Revelli 1935 8mm	$1200	5D6	400	20
Goryunov SG43 7.62mm	$1100	5D6	250	100 belt
Johnson M1941 .30	$1000	5D6	400	20
Knorr Bremse MG35	$1300	5D6	250	50 belt
Lahti Saloranta 7.62mm	$1000	5D6	400	20
M1918 Browning	$3500	5D6	548	20
M249 SAWS	$1000	5D6	457	30
M60	$6000	5D6	1100	100
Madsen 7.92mm	$1100	5D6	400	25
Maschinengewehr 15	$1000	5D6	400	50
Maschinengewehr 34	$1100	5D6	200	50
Maschinengewehr 42	$1200	5D6	1000	50 or 250 belt
Maxim1910 7.62mm	$1400	5D6	200	250 belt
Schwarzlose Model12	$1000	5D6	200	100 belt
Taisho 11 6.5mm	$1000	5D6	200	30
Type 92 7.7mm	$1200	5D6	400	30
Type 96 6.5mm	$1200	5D6	400	30
Type 99 7.7mm	$1200	5D6	400	30
Vickers LMG .303	$1400	5D6	250	250
Vickers Mk1 .303	$1000	5D6	300	250 belt
VZ37 7.92mm	$1500	5D6	300	250 belt

Shotguns	Cost	Damage	Range (metres)	Ammo
Baikal MP131K	$700	4D6	90	5
Benili M3 Super 90	$1000	4D6	90	9
Browning Auto-5	$600	4D6	30	4
Franchi SPAS12	$1000	4D6	90	9
HK CAWS	$1500	4D6	90	10
Ithaca Autoburglar	$650	4D6	40	4
Knight Masterkey	$1900	4D6	90	3
Remington M870	$300	4D6	90	4
Savage 311-R	$450	4D6	40	2
Winchester M1897	$550	4D6	30	5
Winchester M1901	$650	4D6	30	4

Explosives and Heavy Weapons	Cost	Damage	Range (metres)	Ammo
75mm Antitank Gun	$50,000	10D10	500	1
Artillery	$75,000	10D10	50,000	1
Browning M2HB Machine Gun	$1400	10D10	2000	105 belt
Dynamite	$30	6D6	4 radius	1
Flamethrower	$500	5D10	50	20
Flare Gun	$15	1	10	25
General Electric Minigun	$25,000	10D10	300	1000
Grenade	$150	5D6	5 radius	1
HK 69A1 Grenade Launcher	$950	Varies	400	1
Liquid Nitroglycerin	$200 per 25 grams	3D6 x10 per 25 grams	6	1
M203 Grenade Launcher	$850	Varies	400	1
Molatov Cocktail	N/a	2D6	4 radius	1
Mortar	$540	10D10	30 radius	1
Mechem NTW Cannon	$15,000	10D10	1500	3
Plastic and Gelatin	$100 per 50 grams	D4x10 per 50 grams	30 cms	1
PTRS41 Antitank Rifle	$5000	10D10	1500	5

The majority of these weapons are military only. Its up to the GM how you would obtain one.

Normal Ammunition	Cost
Pistols and Submachine Guns	$10 +D10 per 50 rounds
Rifles and Machine Guns	$10 +D10 per 20 rounds
Shotguns	$10 per 25 rounds

Alternative Ammunition	Damage	Cost
Armour Piercing	+6 against the victim's AC	+$100
Glazer	+4 damage to each D6 rolled	+$25
Hollow Point	+2 damage to each D6 rolled	+$12

Grenades	Damage	Cost
Standard	D6 x10 SDC with a blast radius of 5 metres.	$75
Fragmentation	8D6 SDC with a blast radius of 5 metres.	$50
High Explosive	2D6 x10 SDC with a blast radius of 5 metres.	$150
Knockout Gas	These induce drowsiness within D4 melees and sleep within D4 minutes.	$80
Smoke	This produces a cloud of smoke with a radius of 6 metres and comes in a variety of colours. Anyone trying to fire through it is -6 to Thaco.	$40
Tear Gas	Used in riot control; the grenade produces a white cloud of gas on impact with a radius of 6 metres. This blinds opponents for 2D6 minutes and gives -8 to Thaco and any other combat manoeuvres.	$50

4. Vehicles during the Modern era

Following is a generic list of available vehicles minus the cost (which changes all the time and can easily be found on the internet).

Key

Type What kind of vehicle it is.

Size The average size for each vehicle type in metres.

HPs Hit Points; how much damage the vehicle can take before being destroyed.

AC Armour Class; this is a rating for the protective value of a vehicle's figured from 10 (very weak) to 0 or even -10 (the best armour which can be attached). The higher the AC the more vulnerable the vehicle is to damage. Armour provides protection by reducing the chance that a vehicle is attacked successfully (and suffers damage). Armour does not absorb damage, it prevents it.

A/DF Every vehicle has an Acceleration/Deceleration Factor. This is how many hexes or spaces the vehicle can add to or subtract from its speed in one turn. Vehicles cannot accelerate and decelerate on the same turn. 1 space = 2 square metres.

MR Manoeuvre Rating; Each vehicle also has a manoeuvre rating. This number signifies how many times the vehicle can turn during its move. The vehicle must move forward at least 1 space or hex after each turn.

Speed The maximum speed in kilometres per hour the vehicle can travel at. This is only an average however and may vary between different models.

Land Vehicles

Land vehicles are classified broadly by what is used to apply steering and drive forces against the ground: wheeled, tracked, railed, or skied.

Automobiles	Size	HPs	AC	A/DF	MR	Speed
Limousine	5	350	4	2	1	200
Racing Car	4	300	4	4	2	360
Standard Car	3-4	300	4	2	2	220
Super Car (sports)	4	300	4	3	2	267
Ute	4	350	4	2	1	210
Van	4	450	4	1	1	190

Construction	Size	HPs	AC	A/DF	MR	Speed
Backhoe	7	300	4	1	2	60
Bulldozer	12	800	2	1	2	30
Cement Truck	7	600	4	1	1	70
Cherrypicker	4	100	4	1	2	40
Crane	17	350	4	1	1	60
Driller	17	650	2	1	1	70
Driller, Giant	130	2000	1	1	1	60
Dump Truck	4	700	2	1	1	70
Dump Truck, Giant	15	2000	1	1	1	65
Excavator	10	400	4	1	1	30
Excavator, Bucket	225	4000	1	1	1	30
Farm Tractor	3	400	5	1	2	30
Forklift	3	100	5	1	2	40
Front Loader (shovel)	4	500	2	1	1	40
Grader	4	400	2	1	1	30
Harvester	5	600	4	1	1	40
Hydraulic Shovel	11	900	1	1	1	30
Load Haul Dump Machine	6	750	2	1	1	50
Personnel Carrier	6	400	4	2	2	60
Resurfacer	4	400	2	1	1	30
Scaler	7	550	2	1	2	30
Scooptram	6	700	2	1	1	45
Scraper	4	300	4	1	1	30
Shtocreter	6	800	3	1	1	30
Shuttle Car	8	450	4	1	1	35
Steam Roller	4	400	2	1	1	30
Transmixer	7	600	4	1	1	70
Tunnel Boring Machine	18	900	2	1	1	20
Wheel Loader	12	800	2	1	2	45

Cycles	Size	HPs	AC	A/DF	MR	Speed
Cycle Sidecar	2.3	100	5	0	1	0
Motorcycle, Heavy	2.5	100	5	2	3	195
Motorcycle, Light	2.5	75	5	2	3	170
Quad Bike	2.3	130	5	2	3	150
Trike	2.4	150	5	2	3	140

Trucks	Size	HPs	AC	A/DF	MR	Speed
Bus, Articulated	18	700	3	1	1	120
Bus, Coach	18	600	3	1	1	120
Bus, Double Decker	12	650	3	1	1	100
Bus, Mini	8	500	3	1	1	100
Bus, Standard	12	600	3	1	1	120
Semi Tractor/Engine	4	500	3	1	1	190
Trailer, Dumper	8	750	3	N/a	1	0
Trailer, Flatbed	8	500	3	N/a	1	0
Trailer, Flatbed (dual level)	8	750	3	N/a	1	0
Trailer, Reefer	14	750	3	N/a	1	0
Trailer, Tanker	14	750	3	N/a	1	0

Miscellaneous	Size	HPs	AC	A/DF	MR	Speed
1 Man Mower	1	50	5	1	2	30
Ambulance	6	350	3	2	1	160
Fire Engine	8	600	2	2	1	150
Push Bike	1	50	6	N/a	3	0
Snowcat	2	400	3	1	2	90
Snowmobile	4	100	5	2	3	40
Train Carriage	20	500	2	N/a	1	0
Train, Electric	20	800	2	1	1	100
Train, Steam	20	650	2	1	1	80
Tram	20	600	2	1	1	100

Military	Size	HPs	AC	A/DF	MR	Speed
Antitank Gun	4	800	1	N/a	2	0
Armoured Personnel Carrier	5	1000	0	2	3	80
Armoured Recovery Vehicle	5	1000	0	1	1	70
Bridgelayer	8	900	0	1	1	50
Infantry Fighting Vehicle	5	1000	0	2	3	80
Minecleaver	5	2000	0	1	1	50
Self Propelled Antiaircraft Gun	5	800	1	1	1	30
Self Propelled Artillery	5	800	1	1	1	30
Tank	8	2000	-1	2	3	70

Air Vehicles

Air vehicles are crafts which are able to fly by being supported by the air, or in general, the atmosphere of a planet. An aircraft counters the force of gravity by using either static

lift or by using the dynamic lift of an airfoil, or in a few cases the downward thrust from jet engines. Balloons and Airships use buoyancy to float in the air in much the same way that ships float on the water. Airplanes or aeroplanes are technically called fixed-wing aircraft and may either use propellers or jets to fly. Helicopters, also known as rotorcraft or rotary-wing aircraft use a spinning rotor with aerofoil section blades (a rotary wing) to provide lift.

Airships	**Size**	**HPs**	**AC**	**A/DF**	**MR**	**Speed**
Airship, Large	24	150	5	1	3	130
Airship, Medium	12	100	5	1	3	110
Airship, Small	6	50	5	1	3	90
Balloon	30	30	6	1	3	35
Glider	9	50	6	0	2	0

Helicopters	**Size**	**HPs**	**AC**	**A/DF**	**MR**	**Speed**
Autogyro	4.5	50	6	1	2	100
Cargo	15	500	2	2	3	150
Corporate, 6 seater	15	300	3	2	3	210
Small, 2 seater	11	200	4	2	3	285

Planes (Prop)	**Size**	**HPs**	**AC**	**A/DF**	**MR**	**Speed**
Four Prop Cargo	50	500	5	4	1	500
Sea Plane	19	350	5	2	2	390
Single Prop Plane	12	300	5	2	2	280
Twin Prop Cessna	12	300	5	3	2	320
Twin Prop Transport	23	500	5	4	1	450

Planes (Jet)	**Size**	**HPs**	**AC**	**A/DF**	**MR**	**Speed**
Lear Jet	13	600	4	5	2	877
Passenger Jet, Jumbo	70	1000	4	7	1	920
Passenger Jet, Medium	50	850	4	6	1	811
Passenger Jet, Small	31	600	4	5	2	547
Scramjet	40	1000	4	8	2	M12
Space Shuttle	37	2000	2	7	1	M20

Planes (Military)	**Size**	**HPs**	**AC**	**A/DF**	**MR**	**Speed**
Combat Helicopter	18	400	2	3	3	340
Four Prop Bomber Plane	43	600	4	4	1	500
Jet Fighter	19	800	2	8	2	M2
Twin Jet Bomber	21	1000	2	7	1	M1

Sea Vehicles

A sea vehicle is a vessel or craft designed to move across or through water. Most would be described as either a ship or a boat. However, there are a number of craft which many people would consider neither such as: canoes, kayaks, rafts, barges, catamarans,

hydrofoils, windsurfers, surfboards (when used as a paddle board), jet skis, and underwater robots.

Boats (Civilian)	Size	HPs	AC	A/DF	MR	Speed (knots)
Freighter	229	2000	1	1	1	34
Hovercraft, 1 man	3	350	6	2	2	56
Hovercraft, Large	56	500	6	2	2	137
Hovercraft, Medium	28	450	6	2	2	112
Hovercraft, Small	14	400	6	2	2	100
Hydrofoil	27	500	6	3	1	117
Jetski	1	50	6	3	3	105
Liner	270	4000	1	1	1	75
Liner, Super	345	8000	0	1	1	45
Rowboat	2	50	6	0	2	0
Speed Boat	6	300	4	3	1	80
Sub, Civilian Explorer	7	400	1	1	2	8
Tanker	458	4000	1	1	1	40
Yacht, Large	50	450	4	1	1	0
Yacht, Small	12	350	5	1	1	0

Boats (Military)	Size	HPs	AC	A/DF	MR	Speed (knots)
Aircraft Carrier	300	10,000	0	1	1	65
Battleship	270	9000	0	1	1	30
Corvette	128	5000	1	2	3	111
Cruiser	173	8000	0	2	1	60
Destroyer	158	7000	0	2	1	83
Frigate	43	6000	0	2	2	62
Sub, Diesel	80	7000	0	2	1	23
Sub, Nuclear	110	8000	0	1	1	52
Sub, Typhoon	175	10,000	0	1	1	41

5. Modern Vehicle Weapons

Aircraft Cannons

30mm M230 Chain Gun
Cartridge: 30mm
Feed: Link less feed system
Approximate Effective Range: 5910 metres
Damage: 3D6 x10 per round. A short burst of 10 rounds inflicts 6D6 x10, a long burst of 25 rounds inflicts 2D4 x100, while a full melee burst of 100 rounds inflicts 6D6 x 1000.

General Electric 20mm M61A1 Vulcan Six-Barrel Rotary Cannon
Cartridge: 20mm
Feed: Link less feed system
Approximate Effective Range: 5910 metres
Rate of Fire: 4000 rpm to 6000 rpm

Damage: 2D6 x10 per round. A short burst of 10 rounds inflicts 4D6 x10, a long burst of 25 rounds inflicts D6 x100, while a full melee burst of 10 rounds inflicts 4D6 x100.

General Electric 25mm GAU-12/U Five-Barrel Rotary Cannon
Cartridge: 25mm
Feed: Link less feed system
Approximate Effective Range: 6000 metres
Rate of Fire: 4000 rpm to 6000 rpm
Damage: 2D8 x10 per round. A short burst of 10 rounds inflicts 4D8 x10, a long burst of 25 rounds inflicts D8 x100, while a full melee burst of 100 rounds inflicts 4D8 x100.

General Electric 30mm GAU-8/A Avenger Seven-Barrel Rotary Cannon
Cartridge: 30mm depleted uranium rounds
Feed: Link less feed system
Approximate Effective Range: 8100 metres
Rate of Fire: 2100 rpm or 4200 rpm
Damage: 4D6 x10 per round. A short burst of 10 rounds inflicts D4 x100, a long burst of 25 rounds inflicts 2D6 x100, while a full melee burst of 100 rounds inflicts D4 x1000.

2.75 inch Rockets
Payload: Loaded in pods with 7 or 19 rockets
Damage: 3D4 x10 to a 6 metre radius
Range: 1500 metres

Aircraft Missiles

A missile is an explosive warhead fixed to a guided rocket and fired from a missile launcher.

Guided missiles are intelligent with advanced electronic tracking systems and manoeuvring jets that allow them to pursue their prey relentlessly. They have a +4 to Thac0 and can attack once per round until they hit, are destroyed, or run out of fuel. The guidance system works by attacking anyone the pilot has designated a foe prior to launching the missile.

AGM-114A Hellfire Anti-Armour Missile
Used against ground targets
Bonus to Thac0: +1
Damage: 4D6 x100
Blast Radius: 30 metres

AGM-65 Maverick
Used against ground targets
Range: 18 kilometres
Bonus to Thac0: +2
Damage: 6D6 x100
Blast Radius: 35 metres

AGM-88 HARM
Used to attack radar installations
Range: 22 kilometres
Bonus to Thac0: +2 against radar
Damage: 4D6 x100
Blast Radius: 30 metres

AGM-84A Harpoon
Used against ships
Range: 109 kilometres
Bonus to Thac0: +1
Damage: see Mk82 GP bomb below

AGM-84E SLAM
Used against ground targets
Range: 109 kilometres
Bonus to Thac0: +1
Damage: see Mk82 GP bomb below

AIM-9 Sidewinder
Range: 7.2 kilometres
Bonus to Thac0: +2
Damage: 2D6 x100
Blast Radius: 15 metres

AIM-120 AMRAAM
Range: 45 kilometres
Bonus to Thac0: +2
Damage: 3D4 x100
Blast Radius: 20 metres

AIM-7 Sparrow
Range: 35 kilometres
Damage: 3D6 x100
Blast Radius: 25 metres

AIM-54C Phoenix
Range: 272 kilometres
Bonus to Thac0: +1
Damage: 4D6 x100
Blast Radius: 30 metres
Note: Restricted to the F-14 Tomcat.

Aircraft Bombs

Bombs are dumb weapons and cannot deviate to strike moving or alternate targets. There is no range as it depends upon the altitude from which it is dropped; the higher the altitude the longer the possible range of the bomb.

Use the following rules for determining the accuracy of bombs dropped.
Target Size Penalty -
Large target (large building): 0 to Thac0
Medium target (small building): -3 to Thac0
Small target (car, vehicle): -6 to Thac0
Very small target (person): -9 to Thac0

Altitude Penalty -
Low altitude: 0 to Thac0
Medium altitude: -3 to Thac0
High altitude: -6 to Thac0
Very high altitude: -9 to Thac0

As a rule of thumb a bomb misses its target by 5 metres for every point the Thac0 roll was made.

500lb Mk82 General Purpose Bomb
D6 x1000 to a 5 metre radius
2D6 x100 to a 15 metre radius
4D6 x10 to a 30 metre radius
2D6 x10 to a 50 metre radius

500lb Mk82 Snake Eye Bomb
D6 x1000 to a 5 metre radius
2D6 x100 to a 15 metre radius
4D6 x10 to a 30 metre radius
2D6 x10 to a 50 metre radius
Features a high drag tail which slows the bomb upon release to slow down the bomb to allow the aircraft to escape the blast when dropping the bomb at low altitudes.

1000lb Mk83 General Purpose Bomb
2D6 x 1000 to a 5 metre radius
4D6 x 100 to a 15 metre radius
D6 x 100 to a 30 metre radius
4D6 x 10 to a 50 metre radius
2D6 x 10 to a 75 metre radius

2000lb Mk84 General Purpose Bomb
3D6 x 1000 to a 5 metre radius
D6 x 1000 to a 15 metre radius
3D6 x 100 to a 30 metre radius

D6 x 100 to a 50 metre radius
4D6 x 10 to a 75 metre radius
2D6 x 10 to a 125 metre radius

Paveway II Laser-Guided Bombs
Either the Mk82, Mk83, or Mk84 bombs can be converted to use the Paveway system. The Paveway system uses a combination of a laser designator carried by an aircraft or by ground units, the laser guidance and the control fins on the bomb. The designator aims an invisible laser beam on the target and the bomb is dropped. The bomb's guidance system locks on to the beam and follows it using the control fins to glide the bomb to its target. The system negates the altitude penalty above, but still suffer from target size penalties. Bonus to Thac0: +5, but the designator must remain aimed at the target.

Naval Ship Artillery

Naval artillery or naval riflery is warship-mounted artillery used in naval warfare for attacking enemy vessels, bombarding targets on shore (naval gunfire support), or for anti-structural demolition. Smaller-bore guns are sometimes referred to as deck guns, such as on Coast Guard cutters and destroyers. The limitations to the range of the battleships' heavy guns meant that they were effectively replaced by naval aircraft. The secondary and anti-aircraft weapons have fallen to the range and flexibility of guided missiles and naval guns have been reduced in importance though never completely replaced. Modern warships such as destroyers and frigates are typically only armed with one or two naval guns.

Ship Gun Size	Damage	Range
25mm	D4 x20	1.2 kilometres
40mm	D6 x20	12.5 kilometres
47mm	D8 x20	3.6 kilometres
57mm	D10 x20	14.4 kilometres
66mm	D12 x20	14 kilometres
76mm	4D4 x20	20 kilometres
95mm	3D6 x20	3.1 kilometres
100mm	3D6 x20	17 kilometres
102mm	3D6 x20	10.6 kilometres
113mm	D20 x20	2.3 kilometres
120mm	4D6 x20	11 kilometres
127mm	7D4 x20	18.4 kilometres
130mm	5D6 x20	25.5 kilometres
134mm	8D4 x20	23.4 kilometres
140mm	6D6 x20	16.2 kilometres
149mm	2D20 x20	23 kilometres
152mm	2D20 x20	15 kilometres
155mm	7D6 x20	10 kilometres
160mm	8D6 x20	4.6 kilometres
178mm	9D6 x20	3.2 kilometres
190mm	10D6 x20	19 kilometres

Ship Gun Size	Damage	Range
200mm	11D6 x20	29 kilometres
203mm	11D6 x20	33.5 kilometres
234mm	12D6 x20	26.7 kilometres
254mm	13D6 x20	24.5 kilometres
305mm	14D6 x20	14 kilometres
317mm	15D6 x20	5 kilometres
343mm	16D6 x20	11 kilometres
356mm	17D6 x20	33 kilometres
380mm	18D6 x20	41.7 kilometres
381mm	19D6 x20	42 kilometres
406mm	6D20 x20	38 kilometres
413mm	6D20 x20	11 kilometres
450mm	7D20 x20	6 kilometres
457mm	8D20 x20	33 kilometres
460mm	9D20 x20	42 kilometres

To determine the amount of HPs a naval vessel has use the following formula; (total ship displacement weight x1000) divided by 10.

Naval Depth Charges

The depth charge is an anti-submarine warfare (ASW) weapon intended to destroy or cripple its target submarine by the shock of exploding near it. Most use explosives and a fuse set to go off at a preselected depth in the ocean. Depth charges could be dropped by either surface ships, patrol planes or from helicopters. However in modern times the depth charge has been nearly replaced by anti-submarine homing torpedoes.

The damage that an underwater explosion inflicts on a submarine comes from a primary and a secondary shock wave. The primary shock wave is the initial shock wave from the depth charge, and will cause damage to personnel and equipment inside the submarine if detonated close enough. The secondary shock wave is a result from the cyclical expansion and contraction of the gas bubble and will bend the submarine back and forth and cause catastrophic hull breach, in a way that can be best described as bending a plastic ruler back and forth until it snaps.

Up to sixteen cycles of the secondary shock wave have been recorded in tests. The effect of the secondary shock wave can be reinforced if another depth charge detonates on the other side of the hull in a close proximity in time of the first detonation, which is why depth charges normally are launched in pairs with different pre-set detonation depths.

Use the following rules for determining the accuracy of charges dropped.
Target Size Penalty -
Large target: 0 to Thac0
Medium target: -3 to Thac0
Small target: -6 to Thac0
Very small target: -9 to Thac0

Below is the maximum damage a Depth Charge can do (some have much smaller payloads though and do less damage);
D6 x100 to a 5 metre radius
D6 x50 to a 10 metre radius
D6 x25 to a 15 metre radius
D6 x10 to a 20 metre radius

Naval Mines

A naval mine is a self-contained explosive device placed in water to destroy ships or submarines. Unlike depth charges, mines are deposited and left to wait until they are triggered by the approach of or contact with an enemy ship. Naval mines can be used offensively to hamper enemy ships or lock them into a harbour; or defensively to protect friendly ships and create safe zones.

Below is the maximum damage a Mine can do (some have much smaller payloads though and do less damage);
3D6 x 1000 to a 5 metre radius
D6 x 1000 to a 15 metre radius
3D6 x 100 to a 30 metre radius
D6 x 100 to a 50 metre radius
4D6 x 10 to a 75 metre radius
2D6 x 10 to a 125 metre radius

Naval Missiles

Most of these are guided missiles that are designed for use against ships and large boats and are of the sea-skimming type, many use a combination of inertial guidance and radar homing. A good number of others use infrared homing to follow the heat that is emitted by a ship; it is also possible for these missiles to be guided by radio command all the way.

AGM-123 Skipper
A short range missile intended for precision strikes. It is composed of a Mark 83 bomb, fitted with a Paveway kit, and an attached rocket propulsion system to allow it to be dropped at greater distances from the target. Tandem mounted Mk 78 solid propellant rockets which both fire simultaneously on launch provide propulsion.
Range: 25 kilometres
Bonus to Thac0: +1
Damage: see Mk83 GP bomb above

AS34 Kormoran
A German-produced Anti-ship missile using an inertial guidance system for the midcourse phase, switching to active radar homing during the terminal attack phase.
Range: 23 kilometres
Bonus to Thac0: +1
Damage: D6 x1000

BGM-109 Tomahawk
A long-range, all-weather, subsonic cruise missile. Used by NATO as a medium to long range, low altitude missile that could be launched from a submerged submarine.
Range: 2500 kilometres
Bonus to Thac0: +1
Damage: 6D6 x1000

Boeing AGM-84 Harpoon
This NATO missile uses active radar homing, and a low-level, sea-skimming cruise trajectory to improve survivability and lethality.
Range: 124 kilometres
Bonus to Thac0: +1
Damage: 5D6 x1000

BrahMos
A supersonic cruise missile that can be launched from submarines, ships, aircraft or land. It was created in a joint venture between India's Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroeyenia who have together formed BrahMos Aerospace Private Limited.
Range: 290 kilometres
Bonus to Thac0: +1
Damage: 5D6 x1000

Exocet
A French built anti-ship missile whose various versions can be launched from surface vessels, submarines, helicopters and fixed wing aircraft.
Range: 150 kilometres
Bonus to Thac0: +1
Damage: 3D6 x1000

HY-2 Haiying
Chinese missile known in Western media as the Silkworm
Range: 95 kilometres
Bonus to Thac0: +1
Damage: 5D6 x1000

Naval Strike Missile (NSM)
An anti-ship and land-attack missile developed by the Norwegian company Kongsberg Defence & Aerospace (KDA), and whose initial serial production contract was signed in June 2007.
Range: 185 kilometres
Bonus to Thac0: +1
Damage: 4D6 x1000

P-15 Termit
Russian missile from the 1950s. China acquired the design in 1958 and created at least four versions: the CSS-N-1 Scrubbrush and CSS-N-2 versions were developed for ship-launched operation, while the CSS-C-2 Silkworm and CSS-C-3 Seersucker were used for coastal defence.
Range: 80 kilometres
Bonus to Thac0: +1
Damage: D6 x1000

P-120 Malakhit
This is a Russian medium range anti-ship missile used by corvettes and submarines.
Range: 110 kilometres
Bonus to Thac0: +1
Damage: 2D6 x1000

P-270 Moskit
This missile is ramjet-propelled (though launched by a small solid-fuel rocket) and is carried by later-model Sovremenny class destroyers, Tarantul class corvettes, and several smaller warships. This weapon has a top speed of Mach 3 and is considered one of the most lethal anti-ship missiles in the world. The high speed of the missile means typical flight duration of only 25 to 30 seconds, giving a target little time to react.
Range: 300 kilometres
Bonus to Thac0: +1
Damage: 3D6 x1000

P-500 Bazalt
A supersonic cruise missile used by the Russian navy with either a 350 KT nuclear or a 950 kg semi-armour-piercing high explosive warhead (currently only the conventional version remains in service). The P-500 Bazalt uses active radar homing for terminal guidance and can receive mid-course corrections.
Range: 550 kilometres
Bonus to Thac0: +1
Damage: 4D6 x1000 for conventional warhead

P-700 Granit
The P-700 Granit is a Russian naval anti-ship cruise missile.
Range: 600 kilometres
Bonus to Thac0: +1
Damage: 4D6 x1000

P-800 Oniks
The P-800 Oniks is a Russian supersonic anti-ship cruise missile.
Range: 300 kilometres
Bonus to Thac0: +1
Damage: 5D6 x1000

RB12 Penguin
Made by Kongsberg Defence and Aerospace (KDA) of Norway from the early 1970s and continually upgraded since, this is a passive-IR seeker based short-to-medium range naval cruise missile.
Range: 55 kilometres
Bonus to Thac0: +1
Damage: 3D6 x1000

RIM-66
A medium range surface-to-air missile (SAM) originally developed for the United States Navy.
Range: 170 kilometres
Bonus to Thac0: +1
Damage: 4D6 x1000

RPK-9 Medvedka (Mole cricket, NATO Designation SS-N-29)
Russian missile system used to engage submarines. The system comprises 8 missiles each with the small torpedo as the warhead.
Range: 20 kilometres
Bonus to Thac0: +1
Damage: 2D6 x1000

Sea Eagle
A medium weight 'fire-and-forget' sea-skimming anti-ship missile designed and built by BAe Dynamics (now MBDA) in service with the Indian Navy.
Range: 110 kilometres
Bonus to Thac0: +1
Damage: 3D6 x1000

Naval Torpedoes

A torpedo is a self-propelled explosive projectile weapon launched above or below the water surface, propelled underwater toward a target and designed to detonate on contact with or in proximity to a target.

APR-3E
APR-3E is a Russian light antisubmarine acoustic homing torpedo. Once entering water the control surfaces of the torpedo enable the torpedo to travel in a spiral path with the help of gravity without starting the engine. During this stage the acoustic seeker of the torpedo searches for targets. Once the target is identified, the engine starts and solid propellant rocket engine ensures the targets has virtually very little or no time to react thus increasing the kill probability.
Range: 3 kilometres
Knots: 56
Damage: 2D6 x100

Mark 46
Designed to attack high-performance submarines, the Mark 46 torpedo is the backbone of the U.S. Navy's lightweight aerial torpedo inventory and is the current NATO standard.
Range: 11 kilometres
Knots: 40
Damage: 2D6 x100

Mark 48
The Mark 48 and its improved ADCAP (Advanced Capability) variant are heavyweight submarine-launched torpedoes. They were designed to sink fast, deep-diving nuclear-powered submarines and high-performance surface ships.
Range: 50 kilometres
Knots: 55
Damage: 3D6 x100

Mark 50
The Mark 50 torpedo is a U.S. Navy advanced lightweight torpedo for use against fast, deep-diving submarines. The Mk-50 can be launched from all ASW aircraft and from torpedo tubes aboard surface combatant ships.
Range: 15 kilometres
Knots: 40
Damage: 3D6 x100

Mark 54
The Mk 54 was created by combining the homing and warhead portions of the Mk 50 and the propulsion unit of the Mk 46, improved for better performance in shallow water and with the addition of commercial off the shelf (COTS) technology to further reduce costs.
Range: 11 kilometres
Knots: 44
Damage: 3D6 x100

Mark 60 Encapsulated Torpedo (CAPTOR)
The CAPTOR (Mark 60 Encapsulated Torpedo) is the United States Navy's primary anti-submarine naval mine. This deep-water mine is laid by ship, aircraft or submarine, and is anchored to the ocean floor. When its sonar detects a hostile submarine, the CAPTOR launches a Mark 46 torpedo.
Range: 7.2 kilometres
Knots: 28
Damage: 2D6 x100

Type 53-65
The 53-65 torpedo family are Russian made, wake-homing torpedoes designed to destroy surface ships.
Range: 22 kilometres
Knots: 44
Damage: 3D6 x100

VA-111 Shkval
This Russian torpedo controls its direction using four fins that skim the inner surface of the supercavitation envelope. To change direction the fin or fins on the inside of the desired turn are extended and the opposing fins are retracted. To make faster turns the push plate on the nose can be used to control the shape of the bubble the torpedo is travelling in. These can be deployed in a drum containing six vertically placed torpedos as well as a central guidance system to act as a deep sea mine of the PMK-2 type.
Range: 200 kilometres
Knots: 50
Damage: 3D6 x100

Tank Weaponry

BMP-2 30mm Cannon
Approximate Effective Range: 90 metres
Damage: 8D6 per shell

M1A2 Abrams Cannon
Approximate Effective Range: 120 metres
Damage: 6D20 per shell

M2A2 Bradley 25mm Cannon
Approximate Effective Range: 105 metres
Damage: 8D6 per shell

6. The Fantasy Vehicle Construction Manual 1.2

Vehicles are used primarily for transportation, but for your average adventurers they may well need additional capabilities such as spy equipment, and weapons.

Step 1: Choose the Vehicle Type

Determine what the body will look like. The choices are;
Air Vehicle - these include airships, balloons, and their military equivalents.
Land Vehicle - these include carts, chariots, wagons, and their military equivalents.
Sea Vehicle - these include all forms of boats.
In an ancient setting vehicle attributes could only be increased by magic.

Step 2: Increase Vehicle Attributes

Listed here are how much it costs to buy each individual point of each attribute. eg. between 1 and 2 A/DF cost 1 point each, while 3 to 5 cost 2 points each.

AC - This is a rating for the protective value of a vehicle's figured from 10 (very weak) to 0 or even -10 (the best armour which can be attached). The higher the AC the more vulnerable the vehicle is to damage. Armour provides protection by reducing the chance

that a vehicle is attacked successfully (and suffers damage). Armour does not absorb damage, it prevents it.

A/DF - every vehicle has an Acceleration/Deceleration Factor. This is how many hexes or spaces the vehicle can add to or subtract from its speed in one turn. Vehicles cannot accelerate and decelerate on the same turn. 1 space = 2 square metres.

HPs - how many Hit Points the vehicle has or much damage it can take before being destroyed.

MR - each vehicle also has a manoeuvre rating. This number signifies how many times the vehicle can turn during its move. The vehicle must move forward at least 1 space or hex after each turn.

Speed - how fast in kilometres per hour the vehicle can travel at.

Vehicle Attribute Cost Table

Attribute	1 Point Each	2 Points Each	3 Points Each
A/DF	1-2	3-5	
AC	6 to 3	2 to -3	-4 to -10
HPs	1-200	201-800	801+
MR	1-2	3-5	
Speed	1-200	201-Mach 1	Mach 2+

Step 3: Add Equipment

When you first select your vehicle it will already have some of this equipment (such as wheels). Where this is the case the cost here is for their replacement or the addition of extra ones. Otherwise the cost is for adding new equipment.

1. Engines	Cost
Animal Harness	1
Balloon	2
Oar	1 per 2 oars
Paddle Wheel	1 per pair of paddles
Sail	2 per sail

Extraordinary Engines	Cost
Beamed Mana	10
Bio Converter	11
Elemental Furnace	10
Mana Engine	11
Mana Track	3
Soulburner	11

2. Locomotion	Cost
Pontoon	1 per pontoon
Skids	1 per skid
Wheels	1 per wheel
Wings	2 per wing
Wings, Swing	2 per wing

3. Audio and Optical	Cost
Heliograph	1
Loudspeaker	1
Periscope	1
Semaphore	1
Signal Lamp	1
Telescope	1

4. External	Cost
Articulation	2
Crane	1
Dozer blade	1
Drill	1
Dump Bin	1
Grader	1
Hedgerow Cutter	1
Hitch	1
Multisection	2
Sidecar	1
Submersible	3
Winch	1
Wrecking Ball	1

5. Facilities	Cost
Cargo Bay	2
Corvus	1
Dock	2
Galley	1
Garage	2
Hangar	2
Holding Cell	2
Passenger Cabin	1
Recreation	1
Secret Compartment	2
Stairway/ Ladder	1
Toilet	1
Workshop	2

6. Weapons	Cost
Ballista, Heavy	3
Ballista, Light	1
Ballista, Medium	2
Ballista Bolts	1 for 6
Cannon, Heavy	3
Cannon, Light	2
Cannon Shot	1
Catapult, Heavy	3
Catapult, Light	1
Catapult, Medium	2
Catapult Stones	1
Catapult Stones, Chain	2
Firedrake	3
Firedrake Ammunition	2
Ram	1
Scorpio	1
Scorpio Arrows	1 for 6
Trebuchet	1
Trebuchet Stones	1
Vehicular Caltrops	1

Section 0: Free Equipment

Depending on the vehicle type, when you first purchase it, it may come with some of the following equipment free. Adding additional equipment will of course cost you.
Anchor Large watercraft are assumed to have at least one anchor. A device, normally made of metal, used to connect a vessel to the bed of a body of water to prevent the craft from drifting due to wind or current.

Doors and Hatches
All vehicles large enough to need them are assumed to come with normal doors or hatches.

Lanterns
Lanterns illuminate an area in front of the vehicle and can be seen at 20 times that distance. These are sufficient for normal night time travel.

Locks and Keys
Standard locks for vehicle doors.

Meteorological Instruments
Any water or aircraft that is large in size can be assumed to have wind vanes, wind socks, thermometers, etc. to measure temperature, humidity, wind speed, etc.

Safety Belts
Safety straps or belts, although not all vehicles have them.

Ship's Tiller
A tiller or till is a lever attached to a rudder post (American terminology) or rudder stock (English terminology) of a boat that provides leverage in the form of torque for the helmsman to turn the rudder. The tiller can be used by the helmsman directly pulling or pushing it, but it may also be moved remotely using tiller lines or a ship's wheel. Rapid or excessive movement of the tiller results in an increase in drag and will result in braking or slowing the boat. In steering a boat, the tiller is always moved in the direction opposite of which the bow of the boat is to move. If the tiller is moved to port side (left), the bow will turn to starboard (right). If the tiller is moved to starboard (right), the bow will turn port (left).

Ship's Wheel
A ship's wheel or boat's wheel is a device used aboard a water vessel to change that vessel's course. Together with the rest of the steering mechanism, it forms part of the helm. It is connected to a mechanical, electric servo, or hydraulic system which alters the vertical angle of the vessel's rudder relative to its hull. In some modern ships the wheel is replaced with a simple toggle that remotely controls an electro-mechanical or electro-hydraulic drive for the rudder, with a rudder position indicator presenting feedback to the helmsman.

Wheels
Wheels allow a vehicle to roll along on the ground and the first set come free being however many are necessary whether 2 for a bike, 3 for a trike, 4 for a car, 6 for a semi, etc. Standard wheels are used by most ground vehicles. They are designed for use on a road, but have limited cross-country capability. They are assumed to have a sprung suspension and tires.
Off-Road wheels are heavy wheels with high clearance suspensions and large tires for cross country use.
Smaller wheels are mainly used as landing gear for aircraft. They have poor off-road capability, especially if the vehicle is very heavily loaded. Heavy wheels are larger and heavier versions of the standard wheels. They beef up a vehicle’s suspension for transporting heavier loads. They are common on trucks.
Railway wheels are heavy wheels built solely for use on railway tracks. A vehicle with railway wheels can carry great loads and move more quickly as long as it stays on the railroad.
Retractable wheels are wheels that can retract into the vehicle. This is useful for reducing drag if the vehicle flies. If a vehicle with retractable wheels will also have wings the wheels can retract into either the body alone or the body and wings.

Wings
All planes come with 2 wings. Wings are a means by which a heavier than air vehicle can achieve flight. A vehicle with wings must be given two of these including a tail to use for stability and steering. Wings are used to generate lift aerodynamically, through the motion of the wings through the air. A wing is curved so that the flow of air going over the wing travels faster than that passing under it. The faster air travels, the lower its pressure. Because the air under the wing is moving slower and is at a higher pressure than

the air immediately above it, the air tries to rise upward – and this results in lift. If a winged vehicle on the ground is moving fast enough, its wings' motion through the air will result in enough lift to counter the weight of the airplane, and the aircraft will lift into the air and enter aerodynamic flight. However to stay in the air it must continue to move at or faster than this speed.

Section 1: Engines

This is what powers or propels the vehicle.

Animal Harness

A beast intended to pull a vehicle must be trainable. However, GMs of fantasy campaigns should feel free to allow chariots drawn by tigers, bears, giant lizards, mice, wolves, animated golems or other fantastic creatures – especially if the driver can speak with or magically control them. Zombies (human or animal) are very useful. In science fiction campaigns, alien animals or robots may be used, and cybernetic implants or telepathy may control normally untrainable creatures. All animal-drawn vehicles must have a harness. This includes not just the actual harness, but also the pole or shafts and reins. A harness is an animal-drawn vehicle's "drive train," converting the power from the animals into vehicle movement. A harness may either be; a rope connecting the vehicle to the cloth, leather or synthetic collars of the pulling animals; a long pole attached to a yoke around the neck of the animal secured by a flexible throat harness. A harness has no volume, so location is irrelevant. It connects the vehicle's body with the animals. The harness has no volume or power requirement. MR is worked out according to the animal/ s pulling the vehicle minus the weight they're pulling.

Balloon

A vehicle carrying enough lighter-than-air gas will also be lighter than air and will rise up. This fact led to the first successful manned flights in balloons and later in self-propelled airships. Lighter-than-air gas is a cheap, low-tech way to get a vehicle to stay airborne. But it only works in an atmosphere heavier than the gas and a very large volume of lighter-than-air gas is required to produce lift. The choices for lifting gases are hot air, hydrogen or helium. Hot air has little lifting power but is safe and cheap. The lightest of all gases hydrogen is the most effective lifting agent but is also flammable. Helium has somewhat less lifting power than hydrogen, but isn't flammable. It is expensive. Helium is light enough that it escapes from the Earth's atmosphere, with the only significant amounts being found underground.

Oars

Aquatic vehicles only. Rowers work paddles or oars to propel a vehicle through water. An oared vessel is generally not as fast as one powered by sails however, it is also not at the mercy of the wind. The big disadvantage of oars is that a large ship requires many rowers. Decide how many rowers the vehicle will use. The vehicle will need seats or crew spaces for that many rowers. On larger vessels, seats may be arranged so several rowers may use a single oar; as a result, the cost of oars and oarholes is per rower, not per oar. Rowing positions must be located in the body or in pods attached to the body. MR is determined by the rowers and the thrust they can generate; add the combined Strength of

all the rowers, then divide the total in half. This is the boat's MR. If rowers are injured or stop rowing, or the vehicle has less than its maximum number of rowers, motive thrust will drop, reducing performance. Also, a sideswipe collision against a rowing vehicle will damage the actual oars or paddles and injure rowers. A disabled rowing position or rower can't contribute to motive thrust.

Paddle Wheel
Aquatic vehicles only. In service by 1800 these were the first successful means of powered water propulsion, extensively utilized by steam-powered watercraft prior to the invention of the screw propeller. Paddle wheels are heavy and bulky, but are the most effective propulsion system available until 1837. A vehicle may have one or more paddle wheels; odd numbers of paddle wheels are usually installed in the stern of the vehicle while pairs are attached on either side.

Sail
Sails use the wind for propulsion thus they only work in an environment where there is moving air, although there is no need for it to be breathable. Sails can only be used if a vehicle has a mast.

Extraordinary Engines
Beamed Mana
This involves beaming mana using a transmitter from a mana station to a receiver. It is generally used to allow a vehicle that lacks power to receive power from a larger, stationary ground station. A beamed mana receiver functions like a power plant as long as it is receiving mana from a beamed transmitter. If a more powerful beam is used than the receiver can handle, it will be destroyed, and the vehicle housing it will take damage.

Bio Converter
These are bio-mechanical machines living inside the vehicle, eating food and producing bioelectrical or mechanical energy. They generate energy using food and atmospheric oxygen, and have a "mouth" into which water and food (anything biological) must be placed.

Elemental Furnace
These are magical steam engines using bound fire and air (for combustion) elementals. An elemental furnace functions like a steam engine, except that it can be built by any blacksmith working with a mage and requires no fuel.

Mana Engine
These are technomagic devices that gather ambient magical energy (in the same way a mana organ does in a magical creature) and transform it into electrical power. They do not require fuel, but do not function in no mana zones.

Mana Track
Rather than having an internal power plant, a vehicle may be built to draw power from an manafied railway track (if it has railway wheels) or from an overhead wire (any wheeled

vehicle). A vehicle with a mag-lev lifter can also be given this option, but “contact” with a mag-lev track is electromagnetic, not physical. The various power pick-ups and transformers needed for this are treated exactly as if they were a power plant.

Soulburner
This is a necromantic machine fuelled by life-force. It does not use normal fuel. Instead, an intelligent, sentient being must be placed within it. When a victim dies, he must be replaced if the power plant is to continue operation. Soulburners do not function in no mana areas. Damage caused by a soulburner heals at the normal healing rate. Regeneration, medicine or Healing spells do not speed recovery.

Section 2: Locomotion Equipment

The seemingly simple task of walking involves shifting one's centre of gravity while moving in a forward direction and taking into account imperfections of the terrain. With the aid of vision and the inner ear humans are able to accomplish the precarious act of walking. Throwing the weight of several tons of walking metal requires a lot of minute real time adjustments, so to make machines walk is no simple task.

Pontoon
Some light aircraft, notably seaplanes, are designed to land on pontoons and float. Build these as waterproof or sealed pods attached to the body or wings containing nothing but empty space. A vehicle should generally have two pontoons (each the same size) as under-body pods. A vehicle may have both retractable wheels and pontoons.

Skids
Skids are the oldest form of motive system dating back to prehistory. They can represent sled, ski or sleigh-style runners or aircraft landing skids. Any vehicle can use skids to slide along on the ground although it will need some form of external propulsion system like harnessed animals, sails, propellers or a jet engine to move under its own power. Skids are slower than wheels on normal terrain but are very effective on ice or snow. Skids can be built to retract into the vehicle which is useful for reducing drag in flight. The only disadvantage is that this will take up space in the vehicle. If a vehicle with retractable skids will also have wings decide whether the skids retract into the body or into the body and wings.

Wheels
Wheels allow a vehicle to roll along on the ground. Standard wheels are used by most ground vehicles. They are designed for use on a road, but have limited cross-country capability. They are assumed to have a sprung suspension and tires. Off-Road wheels are heavy wheels with high clearance suspensions and large tires for cross country use. Smaller wheels are mainly used as landing gear for aircraft. They have poor off-road capability, especially if the vehicle is very heavily loaded. Heavy wheels are larger and heavier versions of the standard wheels. They beef up a vehicle’s suspension for transporting heavier loads. They are common on trucks. Railway wheels are heavy wheels built solely for use on railway tracks. A vehicle with railway wheels can carry great loads and move more quickly as long as it stays on the railroad.

Wings
The cost is for adding extra wings beyond the normal complement.

Wings, Swing
These adjustable wings allow the pilot of the plane to change the position of the wings depending on the speed he wishes to travel. Forward for slower, subsonic flight, or swept back for supersonic flight. When the wings are swept forward it allows the plane to travel slower and use less fuel.

Section 3: Audio and Optical Equipment

These are devices that measures sound, optical or another physical quantity and converts it into a signal which can be read by an observer or by an instrument.

Heliograph
A heliograph consists of a mirror and a sighting device. Slight movements of the mirror send a pulse code by moving a reflected beam on or off the target. Only the target can read the signal properly and messages can only be sent from a stable platform, a ship or a moving vehicle. Range is limited by line of sight, and also depends on the light source; sunlight gives a maximum range of 30 miles and moonlight is 5 miles. If artificial sources are attached to the heliograph, range will vary depending on the light's intensity.

Loudspeaker
Amplifies a person's voice up to 120 decibels.

Periscope
An extendable sensor periscope is a tube and viewer containing an arrangement of mirrors or prisms to permit observation from outside a direct line of sight, A periscope can be extended or retracted in 2 seconds. A periscope on a naval submarine is normally between 9 and 18 metres long (this is periscope depth) to allow observation from well below the waves.

Semaphore
A pair of movable pointers mounted on a mast used to send any hand semaphore alphabet. Naked eye visibility is a kilometre. Systems using single pointers, rotating coloured disks, shutter arrangements, or more than two perform similarly, but don't use hand semaphore codes.

Signal Lamp
This lamp (limelight or electrical) is lined with a shutter allowing it to be used for Morse code. Effective range is 25 kilometres (or line of sight).

Telescope
A telescope uses optical lenses to enhance human distance vision. It essentially does two things: it gathers light over a larger area of space allowing detection of fainter objects and it improves resolution allowing detection of finer detail. In darkness telescopes can only spot objects that emit light such as stars or lighted buildings, or are illuminated by other

light sources like the moon or an object silhouetted against a light or source of reflected light. Telescopes are rated for their maximum magnification.

Section 4: External Equipment

This refers to any equipment which can only be placed outside the vehicle mainly for executing construction tasks.

Articulation
This is an option for any vehicle with tracks, halftracks, or wheels. The vehicle body is jointed in the middle to allow a smaller turning area and improve performance over rough ground. This feature is common on very large vehicles.

Crane
A crane is a type of machine used for lifting, generally equipped with a hoist (device) (also called a wire rope drum), wire ropes or chains and sheaves, that can be used both to lift and lower materials and to move them horizontally. It uses one or more simple machines like a hoist to create mechanical advantage and thus move loads beyond the normal capability of a human.

Dozer Blade
A dozer blade is a substantial metal plate used to push large quantities of soil, sand, rubble, etc, during construction work.

Drill
Drills are used for digging holes at a rate of 30 metres per hour in earth or ice, half that for soft rock, 1/4 for hard rock. Decide on the maximum depth it can drill.

Dump Bin
A typical dump truck is equipped with a hydraulically operated open-box bed hinged at the rear, the front of which can be lifted up to allow the contents to be deposited on the ground behind the truck at the site of delivery.

Grader
A grader is a long blade used to create a flat surface.

Hedgerow Cutter
A light triangular blade that may be attached to a ground vehicle. It is small and low enough that it does not impede firing like other blades. It enables the vehicle to cut a path through brush.

Hitch
A vehicle can be equipped to tow another vehicle, or to be towed itself. A hitch is a hook, or other device that enables a vehicle to pull another vehicle. Attaching or detaching a hitched vehicle takes at least 10 seconds and requires exiting the vehicle.

Multisection
This modification allows the vehicle to be broken down into modules for easy transport. A mechanic's toolkit is required to assembly the vehicle. Otherwise an actual machine shop or vehicle assembly yard is needed. Failure means the time was wasted, but another attempt may be made; critical failure means a vital part is damaged.

Sidecar
A vehicle with standard, heavy or off-road wheels that has two wheels may be designed to accept a sidecar. A sidecar that is released while its vehicle is moving will crash unless it has a propulsion system of its own.

Submersible
This feature is required for underwater vehicles. Making a vehicle submersible equips it to dive and swim underwater. The body has control planes for steering underwater, a strong inner pressure hull and an outer shell containing ballast tanks and pumps to control buoyancy. While surfaced the vehicle is under the influence of positive buoyancy and floats. When moving submerged buoyancy becomes neutral by taking in water to allow the vehicle to stay at the desired depth. To dive or to rest on the bottom, negative buoyancy is achieved by adding water or diminishing air. This shape is optimized for swift underwater travel.

Winch
This is a winching mechanism fitted either externally or retractable and designed to lift or haul loads of up to 1 ton. A winch is a mechanical device that is used to pull in (wind up) or let out (wind out) or otherwise adjust the tension of a rope or wire rope (also called cable or wire cable).

Wrecking Ball
This is a crane with a wrecking ball instead of a hook. This prevents it from lifting things but allows it to do 7D6 damage. One attack may be made every three turns.

Section 5: Facilities
This section is for equipment used for amenities or resources.

Cargo Bay
Each cargo bay space is equal to 25 cubic metres of storage space.

Corvus
A corvus is a boarding device that features a hinged counterweight system for mounting a bridge vertically on the side of a ship, with a hooked end to grab onto a target ship. A corvus is usually 3 metres wide and 4.5 metres long. It has 10 hit points per square. Once a corvus is attached, it takes a Strength check as a full-round action to dislodge the corvus. Alternatively, if the corvus is attached to a ship, the pilot of either ship can make a sailing check as a standard action to dislodge the corvus.

Dock
Per complete dock facility for storing and maintaining one boat of up to 10 metres. Can be rebought multiple times adding either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Galley
A well-equipped kitchen. Up to three people can work in it comfortably. The standard galley is adequate for up to ten passengers and crew. It includes a dining area. The seating area can be upgraded from standard to luxurious by doubling the cost.

Garage
Per complete garage facility for storing and maintaining one ground vehicle of up to 10 metres. Can be rebought multiple times either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Hangar
A hangar provides docking space and maintenance facilities for any 10 metre vessel. Part of the hangar includes hangar bay doors to the exterior of the vessel. Can be rebought multiple times adding either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Holding Cell
Standard holding cells are designed to incarcerate one prisoner (although they can be larger). The cells include basic barred gates and a bed.

Passenger Cabin
It comes with a bunk bed for one person. This can be upgraded to a proper bed. Two or more can be bought and connected to make a larger room to contain more people.

Recreation
This represents one form of recreation for each time it is bought. It may include games, pool tables, tennis courts, swimming pool, a stage, restaurants, running areas, parks/ gardens, casino, etc.

Secret Compartment
Small secret compartments can built into the vehicle to hold tools, supplies, weapons, etc. The number of compartments depends on the size and type vehicle and size of the compartment.

Stairway/ Ladder
For standard use or in emergencies when elevators are not functioning.

Toilet
A typical vehicular toilet with a detachable tank.

Workshop
Workshops include basic machinery like drills, lathes, saws, raw materials, spare parts and so forth. Workshops however are not factories. Big constructions cannot be produced in them like vehicles and so forth. However tools could be made, weapons, armour or robots etc can be constructed providing the relevant parts or materials were available, but not in great numbers or speedily.

Section 6: Weapons

Vehicles can be armed with a wide variety of built-in ranged weapons, such as guns, launchers and beam weapons. When installing a weapon the character must specify whether it points forward, backward, right, left, up or down; this determines the direction it can fire. Of course, a weapon in a limited or full rotation turret or open mount can fire in different directions as the turret or mount itself rotates.

Mechanical artillery, guns and launchers all require ammunition. Ready to fire ammunition must normally be located in the same location as the weapon that fires it. If the weapon is in a turret, open mount, superstructure, arm or leg, the ammunition can also be located in the part of the vehicle that subassembly is supported by. Ammunition can also be stored in cargo spaces. This ammunition cannot be used immediately, but can replace fired ready shots if several minutes are spent to unpack and replenish ammo. Ammunition can be stowed in the body, superstructure, pods, turrets, open mounts, arms or legs.

Descriptions of all the weapons can be found on page 35 under Siege Equipment.

7. Skyship Construction Manual

With the high level of magic found in many fantasy RPG campaigns, enchanted vehicles designed to soar through the air are not beyond the realm of possibility. After all, what use are cloud kingdoms, sky realms, and other areas high above the earth if adventurers have no means of travelling to them? Magic such as fly and similar spells are too limited to make travel simple for characters. Furthermore, without some form of reliable transportation the sky kingdoms would lack the ability to carry on any meaningful trade or migrations. Thus, sky ships represent the most common method for non-flying creatures to take to the air. If magic is common in your game (as represented by particularly powerful spells, archmages, and ancient artifacts), skyships should fit into the general feel of the game.

A few wizards know how to construct them and most commoners have seen one soaring across the sky at some point in their lives. In lower magic campaigns where powerful wizards are rare and magic is a wondrous rarity, skyships are rarely encountered on the surface. The sky elves use and maintain them, but the cost and time needed to manufacture them reserves their use for only the most important tasks. Of course, cloud kingdoms and other aspects of an aerial realm fall firmly in the high fantasy camp. As discussed earlier, if you plan to use cloud realms in a low fantasy game you need to

include some explanations as to why cloud kingdoms tend to have more magic than ground ones.

1. Choose Type and Size

The standard skyship (at least as far as standards have developed for this relatively new creation) looks similar to an oceangoing ship, complete with sails. Skyships built for the very wealthy have been outfitted with the finest amenities, with many decorative flourishes included in their construction.

Type	Size (metres)	HPs	AC	A/DF	MR	Speed (kph)
Flying Fortress	200	1500	0	1	1	75
Skimmer	5	45	5	3	4	300
Transport, Civilian Large	40	600	4	1	1	100
Transport, Civilian Standard	20	450	4	1	1	100
Transport, Military	20	450	4	1	2	250
Warship, Escort	35	550	3	1	1	350
Warship, Destroyer	55	750	2	1	1	250
Warship, Dreadnaught	80	950	1	1	1	150

Step 2: Increase Vehicle Attributes

Listed here are how much it costs to buy each individual point of each attribute. eg. between 1 and 2 A/DF cost 1 point each, while 3 to 5 cost 2 points each.

AC - this is a rating for the protective value of a vehicle's figured from 10 (very weak) to 0 or even -10 (the best armour which can be attached). The higher the AC the more vulnerable the vehicle is to damage. Armour provides protection by reducing the chance that a vehicle is attacked successfully (and suffers damage). Armour does not absorb damage, it prevents it.

A/DF - every vehicle has an Acceleration/Deceleration Factor. This is how many hexes or spaces the vehicle can add to or subtract from its speed in one turn. Vehicles cannot accelerate and decelerate on the same turn. 1 space = 2 square metres.

HPs - how many Hit Points the vehicle has or much damage it can take before being destroyed.

MR - each vehicle also has a manoeuvre rating. This number signifies how many times the vehicle can turn during its move. The vehicle must move forward at least 1 space or hex after each turn.

Speed - how fast in kilometres per hour the vehicle can travel at.

The table below shows the cost of increasing each attribute point;

Attribute	1 Point Each	2 Points Each	3 Points Each
A/DF	1-2	3-5	
AC	6 to 3	2 to -3	-4 to -10
HPs	1-200	201-800	801+
MR	1-2	3-5	
Speed	1-200	201-Mach 1	Mach 2+

Step 3: Add Equipment

When you first select your vehicle it will already have some of this equipment (such as wheels). Where this is the case the cost here is for their replacement or the addition of extra ones. Otherwise the cost is for adding new equipment.

1. Engines	Cost
Animal Harness	1
Balloon	2
Helm Beamed Mana	10
Helm Bio Converter	11
Helm Elemental Furnace	10
Helm Mana Engine	11
Helm Soulburner	11
Sail	2 per sail

2. Locomotion	Cost
Pontoon	1 per pontoon
Skids	1 per skid
Wheels	1 per wheel
Wings	2 per wing
Wings, Swing	2 per wing

3. Audio and Optical	Cost
Heliograph	1
Loudspeaker	1
Periscope	1
Semaphore	1
Signal Lamp	1
Telescope	1

4. External	Cost
Crane	1
Dozer blade	1
Drill	1
Dump Bin	1
Grader	1
Hedgerow Cutter	1
Hitch	1
Winch	1
Wrecking Ball	1

5. Facilities	Cost

Cargo Bay	2
Corvus	1
Galley	1
Holding Cell	2
Passenger Cabin	1
Recreation	1
Secret Compartment	2
Stairway/ Ladder	1
Toilet	1
Workshop	2

6. Weapons	Cost
Ballista, Heavy	3
Ballista, Light	1
Ballista, Medium	2
Ballista Bolts	1 for 6
Cannon, Heavy	3
Cannon, Light	2
Cannon Shot	1
Catapult, Heavy	3
Catapult, Light	1
Catapult, Medium	2
Catapult Stones	1
Catapult Stones, Chain	2
Firedrake	3
Firedrake Ammunition	2
Ram	1
Scorpio	1
Scorpio Arrows	1 for 6
Trebuchet	1
Trebuchet Stones	1

Section 0: Free Equipment

Depending on the vehicle type, when you first purchase it, it may come with some of the following equipment free. Adding additional equipment will of course cost you.

Anchor	Just like watercraft skyships need at least one anchor to prevent the craft from drifting due to wind or current when it is not moving.
Doors and Hatches	All vehicles large enough to need them are assumed to come with normal doors or hatches.
Lanterns	Lanterns illuminate an area in front of the vehicle and can be seen at 20 times that distance. These are sufficient for normal night time travel.
Locks and Keys	Standard locks for vehicle doors.
Meteorological Instruments	Any water or aircraft that is large in size can be assumed to have wind vanes, wind socks, thermometers, etc. to measure temperature, humidity, wind speed, etc.
Safety Belts	Safety straps or belts, although not all vehicles have them.

Ship's Wheel	A ship's wheel or boat's wheel is a device used aboard a water vessel to change that vessel's course. Together with the rest of the steering mechanism, it forms part of the helm. It is connected to a mechanical system which alters the vertical angle of the vessel's rudder relative to its hull.

Section 1: Engines

Skyships can move in all three dimensions, with or without the aid of the wind. Unlike most flying creatures, they do not rely on wings for lift thanks to their soarwood hulls. They are able to fly equally well on their sides or even upside down (notwithstanding the risks that such manoeuvres present to passengers and crew). A skyship must have a sail in order to manoeuvre. Helms and sails will be connected to the ship's wheel.

Animal Harness	All animal-drawn skyships must have a harness. This includes not just the actual harness, but also the pole or shafts and reins. A harness is an animal-drawn vehicle's "drive train," converting the power from the animals into vehicle movement. A harness may either be; a rope connecting the vehicle to the cloth, leather or synthetic collars of the pulling animals; a long pole attached to a yoke around the neck of the animal secured by a flexible throat harness. A harness has no volume, so location is irrelevant. It connects the vehicle's body with the animals. The harness has no volume or power requirement. MR is worked out according to the animal/s pulling the vehicle minus the weight they're pulling. A beast intended to pull a vehicle must be trainable. In this case the following options would be available; Dragon, Giant Bat, Giant Eagle, Giant Owl, Giant Vulture, Griffon, Hippogriff, Manticore, and Pegasus.
Balloon	A vehicle carrying enough lighter-than-air gas will also be lighter than air and will rise up. This fact led to the first successful manned flights in balloons and later in self-propelled airships. Lighter-than-air gas is a cheap, low-tech way to get a vehicle to stay airborne. But it only works in an atmosphere heavier than the gas and a very large volume of lighter-than-air gas is required to produce lift. The choices for lifting gases are hot air, hydrogen or helium. Hot air has little lifting power but is safe and cheap. The lightest of all gases hydrogen is the most effective lifting agent but is also flammable. Helium has somewhat less lifting power than hydrogen, but isn't flammable. It is expensive. Helium is light enough that it escapes from the Earth's atmosphere, with the only significant amounts being found underground.
Helm Beamed Mana	This functions like a mana engine except it involves beaming mana using a transmitter from a mana station to a receiver. It is generally used to allow a vehicle that lacks power to receive power from a larger, stationary ground station. A beamed mana receiver functions like a power plant as long as it is receiving mana from a beamed transmitter. If a more powerful beam is used than the

	receiver can handle, it will be destroyed, and the vehicle housing it will take damage.
Helm Bio Converter	This form of helm is a bio-mechanical machine living inside the vehicle, eating food and producing bioelectrical or mechanical energy. It generates energy using food and atmospheric oxygen, and have a "mouth" into which water and food (anything biological) must be placed.
Helm Elemental Furnace	This form of helm is a magical steam engine using bound fire and air (for combustion) elementals. An elemental furnace functions like a steam engine, except that it can be built by any blacksmith working with a mage and requires no fuel.
Helm Mana Engine	This is the most common form of helm used on a skyship. It is a technomagic device that gathers ambient magical energy (in the same way a mana organ does in a magical creature) and transforms it into electrical power. They do require recharging, with 1 mana lasting one hour (or less if the ship has to travel faster, etc). While this provides movement forward; manoeuvring is primarily accomplished through use of the ship's sails. Many helmsmen describe a feeling akin to being submerged to the neck in warm water when they are using the helm, and the ability to see things as if he were standing on the deck. Only one helm can be used at a time, but smart captains are advised to keep another helm onboard as backup.
Helm Soulburner	This is the rarest and most feared form of helm, a necromantic machine fuelled by life-force. It does not use normal fuel. Instead, an intelligent, sentient being must be placed within it, he then dies and his soul and mana power the machine.
Sail	With skyships sails use the wind for manoeuvring and turning, thus they only work in an environment where there is moving air, although there is no need for it to be breathable. Sails can only be used if a vehicle has a mast.

Section 2: Locomotion Equipment

The seemingly simple task of walking involves shifting one's centre of gravity while moving in a forward direction and taking into account imperfections of the terrain. With the aid of vision and the inner ear humans are able to accomplish the precarious act of walking. Throwing the weight of several tons of walking metal requires a lot of minute real time adjustments, so to make machines walk is no simple task.

Pontoon	Some skyships are designed to land on pontoons and float. Build these as waterproof or sealed pods attached to the body or wings containing nothing but empty space. A vehicle should generally have two pontoons (each the same size) as under-body pods. A vehicle may have both retractable wheels and pontoons.
Skids	Any vehicle can use skids to slide along on the ground although it will need some form of external propulsion system like harnessed animals, sails, propellers or a jet engine to move under its own power. Skids are

	slower than wheels on normal terrain but are very effective on ice or snow. Skids can be built to retract into the vehicle which is useful for reducing drag in flight. The only disadvantage is that this will take up space in the vehicle. If a vehicle with retractable skids will also have wings decide whether the skids retract into the body or into the body and wings.
Wheels	Wheels allow a vehicle to roll along on the ground. Standard wheels are used by most ground vehicles. They are designed for use on a road, but have limited cross-country capability. They are assumed to have a sprung suspension and tires. Off-Road wheels are heavy wheels with high clearance suspensions and large tires for cross country use. Smaller wheels are mainly used as landing gear for aircraft. They have poor off-road capability, especially if the vehicle is very heavily loaded. Heavy wheels are larger and heavier versions of the standard wheels. They beef up a vehicle's suspension for transporting heavier loads. They are common on trucks. Railway wheels are heavy wheels built solely for use on railway tracks. A vehicle with railway wheels can carry great loads and move more quickly as long as it stays on the railroad. Retractable wheels are wheels that can retract into the vehicle. This is useful for reducing drag if the vehicle flies. If a vehicle with retractable wheels will also have wings the wheels can retract into either the body alone or the body and wings.
Wings	Not standard for skyships but maybe added if desired. Wings are a means by which a heavier than air vehicle can achieve flight. A vehicle with wings must be given two of these including a tail to use for stability and steering. Wings are used to generate lift aerodynamically, through the motion of the wings through the air. A wing is curved so that the flow of air going over the wing travels faster than that passing under it. The faster air travels, the lower its pressure. Because the air under the wing is moving slower and is at a higher pressure than the air immediately above it, the air tries to rise upward – and this results in lift. If a winged vehicle on the ground is moving fast enough, its wings' motion through the air will result in enough lift to counter the weight of the airplane, and the aircraft will lift into the air and enter aerodynamic flight. However to stay in the air it must continue to move at or faster than this speed.
Wings, Swing	These adjustable wings allow the pilot of the plane to change the position of the wings depending on if its necessary to travel through a narrow gap.

Section 3: Audio and Optical Equipment

These are devices that measures sound, optical or another physical quantity and converts it into a signal which can be read by an observer or by an instrument.

Heliograph	A heliograph consists of a mirror and a sighting device. Slight movements of the mirror send a pulse code by moving a reflected beam on or off the target. Only the target can read the signal properly and messages can only be sent from a stable platform, a ship or a moving vehicle. Range is limited by line of sight, and also depends on the light source; sunlight gives a maximum range of 30 miles and moonlight is 5 miles. If artificial sources are attached to the heliograph, range will vary depending on the

	light' intensity.
Loudspeaker	Amplifies a person's voice up to 120 decibels.
Periscope	An extendable sensor periscope is a tube and viewer containing an arrangement of mirrors or prisms to permit observation from outside a direct line of sight, A periscope can be extended or retracted in 2 seconds. A periscope on a naval submarine is normally between 9 and 18 metres long (this is periscope depth) to allow observation from well below the waves.
Semaphore	A pair of movable pointers mounted on a mast used to send any hand semaphore alphabet. Naked eye visibility is a kilometre. Systems using single pointers, rotating coloured disks, shutter arrangements, or more than two perform similarly, but don't use hand semaphore codes.
Signal Lamp	This lamp (limelight or electrical) is lined with a shutter allowing it to be used for Morse code. Effective range is 25 kilometres (or line of sight).
Telescope	A telescope uses optical lenses to enhance human distance vision. It essentially does two things: it gathers light over a larger area of space allowing detection of fainter objects and it improves resolution allowing detection of finer detail. In darkness telescopes can only spot objects that emit light such as stars or lighted buildings, or are illuminated by other light sources like the moon or an object silhouetted against a light or source of reflected light. Telescopes are rated for their maximum magnification.

Section 4: External Equipment

This refers to any equipment which can only be placed outside the vehicle mainly for executing construction tasks.

Crane	A crane is a type of machine used for lifting, generally equipped with a hoist (device) (also called a wire rope drum), wire ropes or chains and sheaves, that can be used both to lift and lower materials and to move them horizontally. It uses one or more simple machines like a hoist to create mechanical advantage and thus move loads beyond the normal capability of a human.
Dozer Blade	A dozer blade is a substantial metal plate used to push large quantities of soil, sand, rubble, etc, during construction work.
Drill	Drills are used for digging holes at a rate of 30 metres per hour in earth or ice, half that for soft rock, 1/4 for hard rock. Decide on the maximum depth it can drill.
Dump Bin	A typical dump truck is equipped with a hydraulically operated open-box bed hinged at the rear, the front of which can be lifted up to allow the contents to be deposited on the ground behind the truck at the site of delivery.
Grader	A grader is a long blade used to create a flat surface.
Hedgerow Cutter	A light triangular blade that is small and low enough that it does not impede firing like other blades. It enables the vehicle to cut a path through brush.
Hitch	A vehicle can be equipped to tow another vehicle, or to be towed

	itself. A hitch is a hook, or other device that enables a vehicle to pull another vehicle. Attaching or detaching a hitched vehicle takes at least 10 seconds and requires exiting the vehicle.
Winch	This is a winching mechanism fitted either externally or retractable and designed to lift or haul loads of up to 1 ton. A winch is a mechanical device that is used to pull in (wind up) or let out (wind out) or otherwise adjust the tension of a rope or wire rope (also called cable or wire cable).
Wrecking Ball	This is a crane with a wrecking ball instead of a hook. This prevents it from lifting things but allows it to do 7D6 damage. One attack may be made every three turns.

Section 5: Facilities

This section is for equipment used for amenities or resources.

Cargo Bay	Each cargo bay space is equal to 25 cubic metres of storage space.
Corvus	A corvus is a boarding device that features a hinged counterweight system for mounting a bridge vertically on the side of a ship, with a hooked end to grab onto a target ship. A corvus is usually 3 metres wide and 4.5 metres long. It has 10 hit points per square. Once a corvus is attached, it takes a Strength check as a full-round action to dislodge the corvus. Alternatively, if the corvus is attached to a ship, the pilot of either ship can make a sailing check as a standard action to dislodge the corvus.
Galley	A well-equipped kitchen. Up to three people can work in it comfortably. The standard galley is adequate for up to ten passengers and crew. It includes a dining area. The seating area can be upgraded from standard to luxurious by doubling the cost.
Holding Cell	Standard holding cells are designed to incarcerate one prisoner (although they can be larger). The cells include basic barred gates and a bed.
Passenger Cabin	It comes with a bunk bed for one person. This can be upgraded to a proper bed. Two or more can be bought and connected to make a larger room to contain more people.
Recreation	This represents one form of recreation for each time it is bought. It may include games, pool tables, tennis courts, swimming pool, a stage, restaurants, running areas, parks/ gardens, casino, etc.
Secret Compartment	Small secret compartments can built into the vehicle to hold tools, supplies, weapons, etc. The number of compartments depends on the size and type vehicle and size of the compartment.
Stairway/ Ladder	For standard use or in emergencies when elevators are not functioning.
Toilet	A typical vehicular toilet with a detachable tank.
Workshop	Workshops include basic machinery like drills, lathes, saws, raw materials, spare parts and so forth. Workshops however are not factories. Big constructions cannot be produced in them like vehicles and so forth. However tools could be made, weapons,

armour or robots etc can be constructed providing the relevant parts or materials were available, but not in great numbers or speedily.

Section 6: Weapons

Vehicles can be armed with a wide variety of built-in ranged weapons, such as guns, launchers and beam weapons. When installing a weapon the character must specify whether it points forward, backward, right, left, up or down; this determines the direction it can fire. Of course, a weapon in a limited or full rotation turret or open mount can fire in different directions as the turret or mount itself rotates. Mechanical artillery, guns and launchers all require ammunition.

Ready to fire ammunition must normally be located in the same location as the weapon that fires it. If the weapon is in a turret, open mount, superstructure, arm or leg, the ammunition can also be located in the part of the vehicle that subassembly is supported by. Ammunition can also be stored in cargo spaces. This ammunition cannot be used immediately, but can replace fired ready shots if several minutes are spent to unpack and replenish ammo. Ammunition can be stowed in the body, superstructure, pods, turrets, open mounts, arms or legs.

Ballista, Heavy	5D6 damage, 180 kgs weight, 45 metre range
Ballista, Light	3D6 damage, 45 kgs weight, 30 metre range
Ballista, Medium	4D6 damage, 135 kgs weight, 35 metre range
Ballista Bolts	5 kgs weight

The ballista is essentially a very large crossbow. It makes attacks with a straight attack roll (D20) with no modifications (no character base attack bonuses, ability modifiers, etc.) except for range. Loading and cocking a ballista is 3 full-round actions.

Cannon, Heavy	6D10 damage, 2000 kgs weight, 60 metre range
Cannon, Light	3D10 damage, 1000 kgs weight, 60 metre range
Cannon Shot	40 kgs weight

Cannons are typically resting on a wooden carriage (some cannons like the swivel cannon are fixed in position once mounted, though they can be remounted in D4 minutes in a new position). These carriages can be move to a new position on a ship given enough time. Cannons use smoke powder to function. One shot uses 10 charges of powder.

Catapult, Heavy	6D6, 225 kgs weight, 60 metre range
Catapult, Light	4D6, 113 kgs weight, 45 metre range
Catapult, Medium	5D6, 135 kgs weight, 55 metre range
Catapult Stones	9 kgs weight
Catapult Stones, Chain	14 kgs weight

A heavy catapult is a large engine capable of throwing rocks or heavy objects with great force. When fired, one of the crew makes a Profession (siege engineer) roll. If successful, where the object actually lands is determined by rolling D12 and consulting the Deviation (10 ft. to 16 ft) The centre is the desired target. If the check is failed, the DM secretly rolls and consults the same deviation diagram. The result is now where the catapult is

actually aimed. This new result is used as the centre to determine the actual deviation of the attack. Loading the catapult and preparing it to fire takes the full crew 8 full rounds. Initially aiming (or reaiming) takes 10 minutes in addition to loading and preparation time. Three to four crew members can operate the device in three times this time. Fewer than three crew members cannot operate the device.

A Light Catapult is a smaller, lighter version of the heavy catapult. Two crew members can load and prepare this device in 5 full rounds and aim (or reaim) in 5 minutes. One person can crew the engine, but it takes three times the time to aim and prepare.

A Catapult Stone Chain Shot is made of two small catapult stones chained together, this ammunition can be fired from catapults. Chain shot is especially good at tearing through sails and rigging, dealing double its normal damage to that form of propulsion. It deals normal damage to a creature, and if hit, the creature will be knocked prone. Chain shot is relatively ineffective against ships themselves, dealing only 2D6 points of damage for a light catapult, or 4D6 points of damage for a standard catapult.

Firedrake 6D6 damage, 180 kgs weight, 18 metre range
Firedrake Ammunition 9 kgs
These huge siege engines are often mounted on wheels. This apparatus fires gouts of Alchemist's fire in either a 18 metre line or a 9 metre cone (siege crew leader's choice). Targets in the area take 6D6 points of fire damage; those who fail their saves also catch on fire. A firedrake with the broken condition that suffers a further mishap explodes, dealing its damage to all creatures within a 6 metre burst. Firedrakes have 70 hit points.

Ram, Battering combined STR damage, 135 kgs weight
The ram is an immense beam, similar to a ship’s mast, with one end covered with iron shaped into a ram’s head; hence its name. It is suspended from another beam like a balance arm by cables around its middle, and this in turn is supported at both ends by posts fixed in the ground. It is drawn back by a huge number of men who then push it forward in unison with all their might so that it hits the wall with its iron head. Make an unmodified attack roll against the AC of the construction, with failed attempts dealing no significant damage. The ram can be used to make an attack every 3 rounds if fully crewed. With five to nine people, it can be used every 6 rounds. Fewer than five people cannot operate it.

Scorpio 3D6, 9 kgs weight, 45 metre range
Scorpio Arrows 1 kg weight
The scorpio was a crossbow-like device that fired smaller arrows with deadly accuracy used both in the field and in sieges. They were so-named for their deadly, armour-piercing sting and could be operated by just one or two men. Scorpios were meant to kill and injure enemy troops, rather than break down enemy fortifications. Thanks to their smaller size, they could be mounted on or in siege towers. Legionaries either side would continuously keep turning cranks which turned a chain, which operated the various mechanisms to load and fire the catapult. All that was needed was for another soldier to keep feeding in more arrows.

Trebuchet 5D6, 450 kgs weight, 40 metre range
Trebuchet Stones 5 kgs weight
The Trebuchet was a weapon used during siege warfare. The Medieval Trebuchet was similar to a catapult, or stave sling, which was used for hurling heavy stones to smash castle or city walls.

Section 7: Helms

The helm must be securely bolted to a skyship that is in reasonably good shape. If the helm is currently inactive it takes one hour to activate it. This is called powering up. During this time the pilot must remain in physical contact with the helm and maintain full concentration. The pilot can not use the helm to move the ship until it is fully activated. Once activated, as long as the pilot is on the skyship he can control the ship with no need to keep in physical contact with the helm. A pilot may disengage from the helm at will at any time. A helm doesn't loose all of its power the moment it is disengaged. As soon as it is disengaged it stops moving and floats in place. It then takes an hour before it becomes fully inactive. During this time, the ship will slowly descend to the ground. If the pilot becomes unconscious or for some other reason is unable to provide the minimum concentration required to control the ship, it will continue at its current speed and direction.

Section 8: Ship Types

Listed below are examples of the most common types of space and starships encountered in space campaigns. You and your GM are free to add more.

Flying Fortress
These are huge outposts that serve as a base of operations for other ships. A flying fortress is a powerful battle station crafted to establish military dominance in a section of airspace or over a stretch of ground. Powerful overlords with access to mighty magics often craft these war machines to serve as mobile strong points. Nothing inspires more terror in an enemy army than the sight of a floating sky fortress disgorging flights of harpies, manticores, and other creatures to swoop from the sky and rain destruction upon the earth below. Flying fortresses are generally designed with portals, windows, arrow slits, and other features that make it much more suited for battle than its base ship.

Skimmer
Skimmers are small attack skyships. They are fast and manoeuvrable but easy to destroy. The sleek, deadly skimmers are designed for swift strikes against slower or stationary targets. In battle, when the skimmer passes an enemy ship, the marines leap aboard to overpower its crew and claim its cargo as their own. Needless to say, skimmers are quite popular with pirates and other marauders. However, these ships are often used by more legitimate navies during times of war as scouts, pursuit ships, and patrol vessels.

Transport, Civilian

Skyships are the equivalent of water borne ships and are used primarily for transporting supplies and valuable commodities across the sky. Sky ships resemble 15-18th century European style wooden sailing ships. The workhorse of the sky, these ships serve as merchants, explorers, and travellers. In regions where hunting and gathering are common, crews use these ships to scout out new regions and harvest plants and animals they find there. Transports have size enough to carry significant weapons, cargo, and crewmen, but not so large that it is too expensive for the average trader (or buccaneer) to build and maintain. Transports are mainly cargo freighters and can be built in a wide variety of sizes. Transports are mainly cargo freighters and can be built in a wide variety of sizes. These vessels can be used for many jobs from transporting ore to passengers.

Transport, Military
Military transports carry very few weapons relying heavily on other ships for protection. Instead they carry troopers, siege weapons and cargo.

Warship
These are among the slowest and least manoeuvrable skyships. They are however well armed and can absorb a considerable amount of damage. Larger warships can also serve as mobile bases for skimmer squadrons. It transports skimmers to the scene of a battle, launches them, and recovers and re-arms the ones that survive the battle. They are usually tied onto the sides of the warship. A warship can carry 1 skimmer per side for every 10 metres of size.

8. The Modern Vehicle Construction Manual 1.3

Vehicles are used primarily for transportation, but for your average superhero they may well need additional capabilities such as spy equipment, forcefields and weapons.

Step 1: Choose Vehicle Type

Determine what the body will look like. The choices are;

Air Vehicle - these include airships, helicopters, planes and their military equivalents.

Animal Frame - any animal shape.

Geometric Frame - these are basic shapes such as Spheres, Boxes, Pyramids and any other miscellaneous types.

Land Vehicle - these include automobiles, construction, cycles, trucks and their military equivalents.

Sea Vehicle - these include all forms of boats and subs.

Space Vehicle - these include all forms of vessels which travel through space.

Step 2: Increase Vehicle Attributes

Listed here are how much it costs to buy each individual point of each attribute. eg. between 1 and 2 A/DF cost 1 point each, while 3 to 5 cost 2 points each.

AC - This is a rating for the protective value of a vehicle's figured from 10 (very weak) to 0 or even -10 (the best armour which can be attached). The higher the AC the more vulnerable the vehicle is to damage. Armour provides protection by reducing the chance that a vehicle is attacked successfully (and suffers damage). Armour does not absorb damage, it prevents it.

A/DF - every vehicle has an Acceleration/Deceleration Factor. This is how many hexes or spaces the vehicle can add to or subtract from its speed in one turn. Vehicles cannot accelerate and decelerate on the same turn. 1 space = 2 square metres.

HPs - how many Hit Points the vehicle has or much damage it can take before being destroyed.

MR - each vehicle also has a manoeuvre rating. This number signifies how many times the vehicle can turn during its move. The vehicle must move forward at least 1 space or hex after each turn.

Speed - how fast in kilometres per hour the vehicle can travel at.

Vehicle Attribute Cost Table

Attribute	1 Point Each	2 Points Each	3 Points Each
A/DF	1-2	3-5	
AC	6 to 3	2 to -3	-4 to -10
HPs	1-200	201-800	801+
MR	1-2	3-5	
Speed	1-200	201-Mach 1	Mach 2+

Step 3: Add Equipment

When you first select your vehicle it will already have some of this equipment (such as wheels). Where this is the case the cost here is for their replacement or the addition of extra ones. Otherwise the cost is for adding new equipment.

1. Engines	Cost
Animal Harness	1
Anti Grav System	9
Balloon	2
Diesel	2
Electric Fuel Cell	3 per cell
Electric Track	2
Fission	7
Fusion	8
Gas Turbine	4
Hydrojet	2

Engines	Cost
Jet	4
Nuclear	5
Oar	1 per 2 oars
Paddle Wheel	1 per pair of paddles
Petroleum	2
Propeller, Aerial	3 per propeller
Propeller, Screw	2 per propeller
Radiothermal	5
Rotors	3
Sail	2 per sail
Solar	4
Steam	2
VTOL Jet	5 per 2 jets
Chemical Battery	2

Extraordinary Engines	Cost
Antimatter	11
Beamed Power	10
Bio Converter	11
Cosmic Power	12
Elemental Furnace	10
Mana Engine	11
Soulburner	11
Energy Bank	7
Non Rechargeable Power Cells	8 per cell
Rechargeable Power Cells	9 per cell

2. Locomotion	Cost
Afterburner	1
Half Tracked Treads	1 per tread
Hovercraft Skirt	1
Hydrofoil	1 per foil
Jump Jet	3 per jet
Nitrous Oxide System	1
Pontoon	1 per pontoon
Skids	1 per skid
Tracked Treads	1 per tread
Walker Leg/Foot	4 per leg and foot
Wheels	1 per wheel
Wheels, Self Sealing	2 per wheel
Wings	2 per wing
Wings, Swing	2 per wing

3. Audio, Optical and Sensor	Cost
Bomb Detector	3
Bug Detector	2
Camera System	2
Communications Buoy	3
Dosimetre	2
Flight Recorder	3
Heads Up Display	4
Heliograph	1
Holographic Imaging Projector	4
IFF	4
Internal Bioscan	4
Loudspeaker	1
Message Buoy	3
Microwave Antennae	3
Modem Sat Link	3
Motion Detector	2
Night Sight	2
Periscope	1
Radar	3
Radar Detector	3
Radio Jammer	2
Radio Laser	2
Radio Locator	2
Radio System	2
Rear View Camera	3
Searchlight	1
Semaphore	1
Sensor Jamming System	3
Signal Lamp	1
Sonar Communicator	3
Sonar Detector	3
Sonar IFF	3
Sonar Positioning System	3
Sound Recorder	2
Targeting Computer	2
Targeting Sight	2
Telescope	1
Thermo-imager	3
TMDRT System	3
Video Detector	2
Weapon Detector	3

4. Security	Cost
Alarm System	1
Cell Phone Interface	2
Encrypter	2
Escape Pod	3
Fingerprint Lock	2
Ignition Kill Switch	1
Keyless Entry	2
Self Destruct System	3
Vehicle Remote Starter	1
Vehicle Transponder	2

5. External	Cost
Articulation	2
Back Hoe	1
Cement Mixer Drum	1
Cherry Picker	1
Crane	1
Dozer blade	1
Drill	1
Dump Bin	1
Excavator	1
Feller Buncher	1
Flatbed Tower	1
Fork lift	1
Grader	1
Grapple	1
Harvesting Equipment	1
Hedgerow Cutter	1
Integrated Tow	1
Mower	1
Multisection	2
Pile Driver	1
Powered Tillage Equipment	1
Shovel	1
Sidecar	1
Submersible	3
Transforming Steel	10/20
Winch	1
Wrecking Ball	1

6. Facilities	Cost
Air-Recycling System	1
Cargo Bay	2
Dock	2
Elevator	1

6. Facilities	Cost
Fire Suppression System	1
Galley	1
Garage	2
Hangar	2
Holding Cell	2
Interior Lighting	1
Laboratory	2
Medlab	2
Passenger Cabin	1
Pilot's Compartment	1
Recreation	1
Running Lights	1
Secret Compartment	2
Shower	1
Stairway/ Ladder	1
Toilet	1
Workshop	2

7. Pilot	Cost
Automatic Pilot	2
Ejection Seat	3
Ejection Seat Hover Vehicle	4
Emergency Beacon	2
GPS	1
Voice Activated Controls	5

8. Additional	Cost
Bilge Pump	1
Extra D	11
Forensics System	2
Grappler Mags	3
Hitch	4
Image Inducer	4
Suction Grips	2
Tractor Beam	5
Utility Arms	3
Van Allen Bonds	6
Water Flotation System	3

9. Defenses	Cost
Absorption Defense	7
Anti-Missile System	1
Atmospheric Shielding	3
Automated Skin Sealing	6
ECM	1

Defenses	Cost
ECM Decoy Probe	3
Electrified Surface	5
EMP Ball	4
EMP Blaster	4
Flare System	1
Forcefield Device	5
Hardened Circuits	3
Intangitator	5
Minesweeping Roller	2
Oil Slick Sprayer	2
Radiation Shielding	3
Reflective Hull	3
Roll Cage	1
Smoke Screen	2
Stealth Cloak	3
Stealth Mode	4

10. Weapons	Cost
2.75" Rocket Launcher	2
Aircraft 30mm M230	2
Aircraft 20mm M61A1	2
Aircraft 25mm GAU-12/U	2
Aircraft 30mm GAU-8/A	2
Aircraft Missile	1
Bomb Dispenser	2
Flamethrower	1
Frigex Cannon I	4
Frigex Cannon II	4
M1A2 Abrams Tank Cannon	2
M2A2 Bradley Tank 25mm Cannon	2
MiniGun	1
Missile launcher Pods	2
Naval Depth Charge	1
Naval Mine	1
Naval Missile	1
Naval Ship Artillery	2
Naval Torpedo	1
Ram Plate	1
Sonic Disruptor	3
Vehicular Caltrops	1

Section 0: Free Equipment

Depending on the vehicle type, when you first purchase it, it may come with some of the following equipment free. Adding additional equipment will of course cost you.

Anchor
Large watercraft are assumed to have at least one anchor. A device, normally made of metal, used to connect a vessel to the bed of a body of water to prevent the craft from drifting due to wind or current.

Bilge Pump
Large watercraft are assumed to have bilge pumps to remove water which comes from leaks. They can remove 10 lbs of water every minute.

Doors and Hatches
All vehicles large enough to need them are assumed to come with normal doors or hatches. On sealed vehicles, these are assumed to be airtight. Actual airlocks and large cargo ramps are exceptions and must be bought separately.

Headlights
All vehicles with power systems are assumed to have headlights which clearly illuminate an area in front of the vehicle and that can be seen at 20 times that distance. These are sufficient for normal night time travel.

Internal Intercoms
Any vehicle big enough to need it is assumed to have some kind of internal communication system. This may involve voice tubes or intercoms.

Locks and Keys
Standard locks for vehicle doors, as well as ignition keys. It should be noted that turning on the power plants of military ground vehicles (and most aircraft and ship engines) doesn't require an ignition key –they just have starter knobs.

Meteorological Instruments
Any water or aircraft that is large in size can be assumed to have wind vanes, wind socks, thermometers, etc. to measure temperature, humidity, wind speed, etc.

Safety Belts
Safety straps or belts, although not all vehicles have them.

Wheels
Wheels allow a vehicle to roll along on the ground and the first set come free being however many are necessary whether 2 for a bike, 3 for a trike, 4 for a car, 6 for a semi, etc.
Standard wheels are used by most ground vehicles. They are designed for use on a road, but have limited cross-country capability. They are assumed to have a sprung suspension and tires.
Off-Road wheels are heavy wheels with high clearance suspensions and large tires for cross country use. Smaller wheels are mainly used as landing gear for aircraft. They have poor off-road capability, especially if the vehicle is very heavily loaded.

Heavy wheels are larger and heavier versions of the standard wheels. They beef up a vehicle's suspension for transporting heavier loads. They are common on trucks.
Railway wheels are heavy wheels built solely for use on railway tracks. A vehicle with railway wheels can carry great loads and move more quickly as long as it stays on the railroad.
Retractable wheels are wheels that can retract into the vehicle. This is useful for reducing drag if the vehicle flies. If a vehicle with retractable wheels will also have wings the wheels can retract into either the body alone or the body and wings.

Wings
All planes come with 2 wings. Wings are a means by which a heavier than air vehicle can achieve flight. A vehicle with wings must be given two of these including a tail to use for stability and steering. Wings are used to generate lift aerodynamically, through the motion of the wings through the air. A wing is curved so that the flow of air going over the wing travels faster than that passing under it. The faster air travels, the lower its pressure. Because the air under the wing is moving slower and is at a higher pressure than the air immediately above it, the air tries to rise upward – and this results in lift. If a winged vehicle on the ground is moving fast enough, its wings' motion through the air will result in enough lift to counter the weight of the airplane, and the aircraft will lift into the air and enter aerodynamic flight. However to stay in the air it must continue to move at or faster than this speed.

Section 1: Engines
While normal current day vehicles use conventional, fuel-guzzling engines that periodically need to be refuelled. Superhero vehicles can however have more exotic power sources adapted, GM permitting.

Animal Harness
A beast intended to pull a vehicle must be trainable. However, GMs of fantasy campaigns should feel free to allow chariots drawn by tigers, bears, giant lizards, mice, wolves, animated golems or other fantastic creatures – especially if the driver can speak with or magically control them. Zombies (human or animal) are very useful. In science fiction campaigns, alien animals or robots may be used, and cybernetic implants or telepathy may control normally untrainable creatures. All animal-drawn vehicles must have a harness. This includes not just the actual harness, but also the pole or shafts and reins. A harness is an animal-drawn vehicle's "drive train," converting the power from the animals into vehicle movement. A harness may either be; a rope connecting the vehicle to the cloth, leather or synthetic collars of the pulling animals; a long pole attached to a yoke around the neck of the animal secured by a flexible throat harness. A harness has no volume, so location is irrelevant. It connects the vehicle's body with the animals. The harness has no volume or power requirement. MR is worked out according to the animal/ s pulling the vehicle minus the weight they're pulling.

Anti Grav System
This device creates a stabilized gravitic field which holds the vehicle suspended above any solid or liquid surface (up to 5 metres). Lateral movement is provided by a compact turbofan with a top speed of 100kph (this can be increased by buying up speed).

Balloon
A vehicle carrying enough lighter-than-air gas will also be lighter than air and will rise up. This fact led to the first successful manned flights in balloons and later in self-propelled airships. Lighter-than-air gas is a cheap, low-tech way to get a vehicle to stay airborne. But it only works in an atmosphere heavier than the gas and a very large volume of lighter-than-air gas is required to produce lift. The choices for lifting gases are hot air, hydrogen or helium. Hot air has little lifting power but is safe and cheap. The lightest of all gases hydrogen is the most effective lifting agent but is also flammable. Helium has somewhat less lifting power than hydrogen, but isn't flammable. It is expensive. Helium is light enough that it escapes from the Earth's atmosphere, with the only significant amounts being found underground.

Diesel
Diesel Engines are similar to petroleum engines but have a different fuel ignition system. Where petroleum engines use an electric spark for ignition, diesels compress the fuel to ignite it. Diesel fuel is cheaper and less flammable than petroleum. Economy and safety make diesels the engine of choice for modern commercial and military applications where high performance is not essential. Diesels are also common on airships.

Electric Fuel Cell
These are electric power plants that generate energy chemically using oxygen and hydrogen as fuel. They also produce water, usually released as water vapour. Fuel cells are quiet and non-polluting.

Electric Track
Rather than having an internal power plant, a vehicle may be built to draw power from an electrified railway track (if it has railway wheels) or from an overhead wire (any wheeled vehicle). A vehicle with a mag-lev lifter can also be given this option, but "contact" with a mag-lev track is electromagnetic, not physical. The various power pick-ups and transformers needed for this are treated exactly as if they were a power plant. As long as the rails are provided with current, the vehicle will operate.

Fission
These produce power by splitting atoms. The heat this produces either vaporizes a working medium like water to create steam which spins a turbine or generates electricity directly through thermoelectric materials. Lasts for 2 years.

Fusion
These generate energy by fusing hydrogen into helium through a thermonuclear reaction. No refuelling is necessary: the power plant's internal hydrogen fuel tank lasts for 200 years.

Gas Turbine
Gas turbines are derived from jet engine technology. They burn fuel and air, but unlike a reciprocating engine the expanding gasses spin a turbine blade rather than working a piston. This gives a simpler, smoother action and generally makes the power plant lighter. On the down side, turbines are more expensive to manufacture and have a higher average fuel consumption. They have since become quite popular on helicopters, hovercraft and high performance ships, and are now coming into use on armoured fighting vehicles. Unless specially modified, gas turbines do not work underwater or within vacuum, trace or very thin atmospheres.

Hydrojet
Aquatic vehicles only. These suck in water and expel it in high speed jets. They are also called “aquajets” or “pumpjet propulsors.” Hydrojet propulsion requires bulky pumps and is less efficient than a conventional propeller. The main advantage of a hydrojet is that it can be considerably quieter than a propeller, making it of interest for military and covert operations. A vehicle can have any number of hydrojets.

Jet
All jet engines work by pulling in the surrounding air, heating it, and expelling it to produce thrust. They only work in atmospheres of greater than "trace" density. Normally this is used with air vehicles.

Nuclear
A miniaturised reactor (essentially the same as a nuclear submarine’s) which emits no harmful vapours, and offers incredible fuel mileage far beyond that of the most efficient cars ever built. Up to 5 years before needing to be refuelled. However the power source is radioactive, so lots of shielding is required. Without this the radioactivity of the power source could kill people in and near the car, putting a damper on any commute.

Paddle Wheel
Aquatic vehicles only. In service by 1800 these were the first successful means of powered water propulsion, extensively utilized by steam-powered watercraft prior to the invention of the screw propeller. Paddle wheels are heavy and bulky, but are the most effective propulsion system available until 1837. A vehicle may have one or more paddle wheels; odd numbers of paddle wheels are usually installed in the stern of the vehicle while pairs are attached on either side.

Petroleum
Petroleum or Gasoline Engines are the most common engines of the 20th century. They burn a mixture of petroleum fuel and air. The expansion of the heated gasses normally works pistons that drive a shaft, providing the rotary action needed to turn wheels, propellers, or the like.

Propeller, Air
Air vehicles only. Aerial Propellers are the standard means of propelling aircraft. More advanced propellers use superior blade designs to generate more thrust. Aerial propellers also include turboprops – the latter are simply aerial propellers attached to vehicles using gas turbine power plants, rather than the more common gasoline engines.

Propeller, Screw
Aquatic vehicles only. These are rear mounted underwater propellers. Screws were introduced in 1837, and within a few decades had displaced paddle wheels as the primary propulsion system for watercraft. Few vehicles have more than four screw propellers.

Rotors
These are rotating blades mounted atop the vehicle whose rapid rotation functions like a wing, allowing the vehicle to fly as a helicopter. Its advantages over conventional wings are that the rotor is lighter and cheaper, and the stall speed is usually lower. The disadvantages are that it is generally slower and cannot perform the same kind of high-G manoeuvres a winged airplane can. Because the rotor motion is independent of the vehicle's, it can achieve lift while stationary. A rotor turning in a single direction produces torque, causing the vehicle to spin. To prevent this, a small, side-mounted tail rotor or fan is geared to it, and this tail rotor produces a lateral thrust that counteracts this torque. This however becomes unnecessary if the vehicle instead uses two or more big rotors turning in opposite directions to cancel torque, giving added speed and lift at the expense of agility and weight.

Radiothermal
These use a thermoelectric system to convert the heat produced by a decaying radioisotope to energy. They have no moving parts and do not use fuel: the radioisotope is good for several years, after which the power plant itself should be removed and replaced with another. While heavy and expensive, they are very useful in situations where a power plant is required that can operate untended and continuously for a decade or more. They are typically used in deep-space probes and orbital satellites.

Sail
Sails use the wind for propulsion thus they only work in an environment where there is moving air, although there is no need for it to be breathable. Sails can only be used if a vehicle has a mast.

Solar
On a sunny day a solar converter can continually provide power all day. The fuel is free, but there just isn't that much available after nightfall. A powerful backup battery system is strongly recommended if this is your primary onboard power source. Any vehicle can be covered with photoelectric collectors (solar cells). These convert light (usually sunlight) into electric power. They generally serve as a backup power supply or a means of recharging energy banks, but some vehicles may be entirely solar powered.

Steam
Steam engines burn fuel to heat water, turning it into steam. The steam is held under pressure in a boiler, and vented into an engine where it works a cylinder to drive a piston. The vertical motion of the piston is usually converted into a more useful rotary motion by the vehicle's propulsion system. All steam engines require a thin or denser atmosphere that contains oxygen in order to function. Models generating sufficient power to be useful on vehicles become available around 1800.

VTOL Jet
VTOL is an acronym for Vertical Take-Off and Landing. This includes fixed-wing aircraft that can hover, take off and land vertically. But could also be installed in a car.

Chemical Batteries
These are early battery designs and remain in use as a cheaper alternative to advanced batteries.

Extraordinary Engines

Antimatter
These produce energy through the mutual annihilation of matter and antimatter. A gram runs the power plant for 5 years.

Beamed Power
This involves beaming energy using a transmitter (usually a microwave beam or laser) from a power station to a receiver. It is generally used to allow a vehicle that lacks a power plant to receive power from a larger, stationary ground station. However, some large vehicles (e.g., aircraft carriers) might use beamed power to power smaller craft. Beamed power is most practical for aircraft, since they can easily maintain a line of sight to the power beam. To operate, the power transmitter must be hooked up to a power plant or energy bank of some sort. The transmitter beam requires line of sight to the receiver (so the beam is blocked by hills, other vehicles, etc.).

If anything except the receiver gets in the way of the power beam, it will take damage as if the beam had been used as a weapon. A beamed power transmitter should normally be mounted in a rotating turret to allow it to track the power receiver. A beamed power receiver functions like a power plant as long as it is receiving power from a beamed transmitter. A power receiver can be designed to receive either laser or maser beamed power, not both. If a more powerful beam is used than the receiver can handle, it will be destroyed, and the vehicle housing it will take damage.

Bio Converter
These are bio-mechanical machines living inside the vehicle, eating food and producing bioelectrical or mechanical energy. They generate energy using food and atmospheric oxygen, and have a "mouth" into which water and food (anything biological) must be placed.

Cosmic Power
These produce power through means unexplainable by modern science. For example, a cosmic power plant may draw energy from another antimatter dimension, or even a magical universe. They provide power indefinitely. All of these power plants normally run continuously until their fuel is exhausted.

Elemental Furnace
These are magical steam engines using bound fire and air (for combustion) elementals. An elemental furnace functions like a steam engine, except that it can be built by any blacksmith working with a mage and requires no fuel.

Mana Engine
These are technomagic devices that gather ambient magical energy (in the same way a mana organ does in a magical creature) and transform it into electrical power. They do not require fuel, but do not function in no mana zones.

Soulburner
This is a necromantic machine fuelled by life-force. It does not use normal fuel. Instead, an intelligent, sentient being must be placed within it. When a victim dies, he must be replaced if the power plant is to continue operation. Soulburners do not function in no mana areas. Damage caused by a soulburner heals at the normal healing rate. Regeneration, medicine or Healing spells do not speed recovery.

Energy Bank
An energy bank is an advanced form of battery which stores electrical power. A vehicle may have one instead of or as well as a power plant. If the vehicle's power plant output does not match the power requirements of all simultaneously-operating systems, then the vehicle must have an energy bank. Note that it is a good idea to install an energy bank if a deflector or force screen is to be used, unless you have added some spare power capacity to your power plant, because fields are added as surface features late in the design process, after the power plant has already gone in, and produce additional power demands. Then the energy bank is drained of power until it is recharged.

Non Rechargeable Power Cells
These are volatile electrochemical or nuclear-thermal batteries using exotic fuels (e.g. californium, metastable helium). They can't be reused once drained – remove the cells and install new ones at full cost.

Rechargeable Power Cells
These are either sophisticated photonic or superconductor loops. They can be recharged.

Battery Storage
Batteries are used in association with the above Power Supply types. Rather than continuously generate onboard power one can store energy in batteries and use it as needed. Batteries can be charged from nearly any power source, can be shaped to fit anywhere on the vehicle, and are much less likely to fail under extreme conditions.

Equivalent to standard commercially available chemical batteries, one can purchase rectangular or cylindrical shaped models from most well-stocked industrial suppliers. These batteries can be custom designed for space considerations, special needs, etc (required for most humanoid robots); multiply costs below by ten. To charge the battery you have to hook it up to an external power source. You can either buy one of the power systems above (in an external form) or buy power from the electric company.
Primary versus Secondary Power Systems

It might be very efficient to use a battery system for a vehicle's primary source, and a continuous source as a secondary system. During peak power usage (combat) the vehicle could draw on power very quickly from the battery. All the while, the battery is being charged by the secondary system. The continuous source could be a smaller, cheaper system in this configuration. The vehicle won't be sitting around for 23 hours a day wasting incredible power output, waiting for that one hour of combat. When a surge of power is finally needed the batteries can provide most of the power, while the continuous system augments the power available.

Section 2: Locomotion Equipment

The seemingly simple task of walking involves shifting one's centre of gravity while moving in a forward direction and taking into account imperfections of the terrain. With the aid of vision and the inner ear humans are able to accomplish the precarious act of walking. Throwing the weight of several tons of walking metal requires a lot of minute real time adjustments, so to make machines walk is no simple task. In high winds or water, a large structure such as a tank-like or larger mecha would have to contend with being severely buffeted around. This does not even take into account battle conditions, where projectiles and explosions produce kinetic forces that could literally blow a two-legged mecha off its heavy metal feet.

Afterburner
This modification for jet engines only essentially sprays pure jet fuel into the engine's exhaust to significantly increase power. It adds 25% to your current speed for one melee round when activated. It also reduces flight duration every time used.

Half Tracked Treads
Halftracks use caterpillar tracks for propulsion and wheels for steering. Halftracks were developed during World War II for light armoured vehicles. They are a hybrid of fully tracked and wheeled vehicles somewhat faster than tracks on a road, but not as good cross-country. Alternatively the front wheels can be replaced with skis. They are most popular on light, motorcycle-sized snowmobiles but are usable on larger vehicles. Ski tracks are excellent at moving over packed snow or ice, but inefficient on normal terrain.

Hovercraft Skirt
Hovercraft skirts allow very low, level flight over ground or water on a cushion of air formed by the thrust of downward-directed fans. The skirt is semi rigid and attached under the body of a hovercraft to efficiently make use of the air cushion generated by its fans. It is usable when the vehicle is moving over land and water.

Hydrofoil
Hydrofoils are underwater “airfoils” that enable a water vehicle to skim along over water at higher speeds than usual.

Jump Jets
A small set of 2 booster jets which allow the vehicle to jump x3 the vehicle's height in distance up and across.

Nitrous Oxide System
This modification when activated by the driver injects Nitrous Oxide into the engine to increase power. It adds 25% to your current speed for one melee round when activated.

Pontoon
Some light aircraft, notably seaplanes, are designed to land on pontoons and float. Build these as waterproof or sealed pods attached to the body or wings containing nothing but empty space. A vehicle should generally have two pontoons (each the same size) as under-body pods. A vehicle may have both retractable wheels and pontoons.

Skids
Skids are the oldest form of motive system dating back to prehistory. They can represent sled, ski or sleigh-style runners or aircraft landing skids. Any vehicle can use skids to slide along on the ground although it will need some form of external propulsion system like harnessed animals, sails, propellers or a jet engine to move under its own power. Skids are slower than wheels on normal terrain but are very effective on ice or snow. Skids can be built to retract into the vehicle which is useful for reducing drag in flight. The only disadvantage is that this will take up space in the vehicle. If a vehicle with retractable skids will also have wings decide whether the skids retract into the body or into the body and wings.

Tracked Treads
Tracks are caterpillar tracks like those of a tank or bulldozer. Tracks are slower than wheels when on roads, but have far superior cross-country performance, which is what endears them to the military.

Walker Leg/Foot
These are robotic legs for walking and running which can be either human, animal or insect in appearance. Legs are even more mobile in rough terrain than tracks. Their disadvantages lie in low speed, poor stability and the greater expense of the leg motors that operate them. If a vehicle has legs, decide how many it has. More legs generally make the vehicle faster and more stable but less manoeuvrable.

Wheels
The cost is for adding extra wheels beyond the normal complement.

Wheels, Self Sealing
When these tires are punctured and deflate a quick seal resin coats the inside of the tire to seal it, then a mini compress re-inflates it. The whole process only lakes one melee action. This allows the vehicle to continue on its way when it would normally have been crippled. The system can only reseal itself twice before needing to be reloaded.

Wheels, Snow
The penalties for driving through snow and ice dont apply with these wheels.

Wings
The cost is for adding extra wings beyond the normal complement.

Wings, Swing
These adjustable wings allow the pilot of the plane to change the position of the wings depending on the speed he wishes to travel. Forward for slower, subsonic flight, or swept back for supersonic flight. When the wings are swept forward it allows the plane to travel slower and use less fuel.

Section 3: Audio, Optical and Sensor Equipment

These are devices that measures sound, optical or another physical quantity and converts it into a signal which can be read by an observer or by an instrument.

Bomb Detector
The unit sniffs out the vapour of a bomb - an invisible, undetectable vapour that's continuously emitted from explosives. If suspicious gasses are present in the air within a 10 metre radius an alarm light will instantly illuminate. But only when the vapour is truly explosive will the light be joined by an audible tone. Only 2 minutes after the alarm is received the unit is warmed up and ready to operate. A single switch then activates the system and in as little as one second an explosive can be located.

Bug Detector
Detects any listening devices within a 20 metre radius.

Camera System
A tiny optical cable colour camera can be installed anywhere outside the vehicle to cover any blind spots. 3.6mm wide angle pinhole lens, low light, .5lux, IR sensitive.

Communications Buoy/Trailing Wire Antenna
This is a buoy or wire several hundred yards in length, trailed behind a sub merged submarine, which floats to the surface and acts as an antenna, allowing the sub to receive and transmit radio messages.

Dosimetre
Detect radioactivity including its level within a 30 metre radius.

Flight Recorder
This is a cockpit flight recorders (black box) like those installed in airliners. The system cannot play back recordings unless removed from the vehicle but is tough enough to survive a crash, explosion or fire.

Heads-Up Display
A small device that projects the engine readout information (speed, engine rpm, etc.) onto the windshield, so that the driver doesn't have to look down while driving.

Heliograph
A heliograph consists of a mirror and a sighting device. Slight movements of the mirror send a pulse code by moving a reflected beam on or off the target. Only the target can read the signal properly and messages can only be sent from a stable platform, a ship or a moving vehicle. Range is limited by line of sight, and also depends on the light source; sunlight gives a maximum range of 30 miles and moonlight is 5 miles. If artificial sources are attached to the heliograph, range will vary depending on the light's intensity.

Holographic Imaging Projector
High definition, excellent colour scale, 3-dimensional images; appropriate for all sensor systems.

IFF
This stands for “Identify Friend or Foe.” It is a specialized transmitter and receiver unit used to identify vehicles that have been detected but whose identity is in question. A military IFF is programmed with an identification code and a list of current friendly codes. The IFF can be triggered to interrogate a vehicle that has been detected, sending an encoded communicator pulse. If the target has an IFF or transponder of its own, and the incoming pulse is from an IFF code that it has been programmed to recognize, it will automatically send back a coded reply. If that reply matches the current list of friendly codes the interrogating IFF was programmed with the interrogating IFF classes the target as friend. If there is no reply or it is an incorrect code the IFF reads the target as foe.

Internal Bioscan
This can be placed anywhere within the vehicle to monitor the pilot's vitals and even transmit the information to another location if desired.

Loudspeaker
Amplifies a person's voice up to 120 decibels.

Message Buoy
These are designed as small vehicles with a floatation hull, radio, and battery with enough armour to survive at their launch depth. Many are launched from decoy dischargers, and range in size. They have a crush depth of 350 metres.

Microwave Antennae
Range of 160 kms.

Modem Sat Link
Satellite internet link.

Motion Detector
Collision warning system with a range of 30 metres.

Night Sight
At the flick of a switch the windshield or any window equipped with this will switch to Night Vision sight. The maximum viewing range of is 120 metres.

Periscope
An extendable sensor periscope is a tube and viewer containing an arrangement of mirrors or prisms to permit observation from outside a direct line of sight, A periscope can be extended or retracted in 2 seconds. A periscope on a naval submarine is normally between 9 and 18 metres long (this is periscope depth) to allow observation from well below the waves.

Radar
Radar systems use both radio waves and laser light to send emissions out from the ship where they will bounce off of targets. The bounced waves become signals that the sensor can track with a high degree of precision. Detect, identify and track up to 100 targets with a range of 100 kilometres.

Radar Detector
Identifies when the unit has been detected and locked onto by a radar.

Radio Jammer
A jammer is an untuned radio transmitter that projects a blanket of powerful noise to drown signals in static. It prevents reception of radio signals within its range, including by the jamming vehicle.

Radio Laser
This radio uses a modulated laser beam instead of radio waves. Its signal can only be picked up by another laser communicator.

Radio Locator
This device intercepts and pinpoints radio broadcasts. A radio direction finder can receive radio transmissions on any normal, police or military frequency. It can also locate the point of origin of these transmissions, though doing so takes at least ten seconds. Locating a broadcast requires the direction finder to be within the broadcasting radio's range.

Radio System
Stereo surround sound speaker system with full range radio frequencies including VHF, UHF, CB and ultrasound.

Rear View Camera
This gadget is a small video camera mounted on the rear facing of the vehicle. It is connected to a monitor next to the drivers seat. While being advertised as an aid for backing into parking spaces, it's real use is for watching out for people trying to follow your vehicle.

Searchlight
6,000,000 Candlepower spotlight with a swivel rotation mounted on the outside.

Semaphore
A pair of movable pointers mounted on a mast used to send any hand semaphore alphabet. Naked eye visibility is a kilometre. Systems using single pointers, rotating coloured disks, shutter arrangements, or more than two perform similarly, but don't use hand semaphore codes.

Sensor Jamming System
Prevents enemy sensors and targeting systems from detecting you. The drawback being they might notice that their sensors are being jammed before you can attack. Range of 100 metres.

Signal Lamp
This lamp (limelight or electrical) is lined with a shutter allowing it to be used for Morse code. Effective range is 25 kilometres (or line of sight).
Sonar Communicator This is an option for communicators. A sonar communicator uses sonar pulses fort underwater communication between two vessels with compatible equipment. Messages can be voice, text, or datalink, and may use scramblers.

Sonar Detector
A very sensitive system that detects active sonar
transmissions (at up to four times active sonar range) and provides a rough bearing and range to the source. It can either be an add-on to an existing sonar array, or have its own dedicated array, and can be tied to the vessel's computer to permit transmission profiling. Note that a normal passive sonar can still detect an active sonar at up to twice the active sonar's range, without any modifications being necessary.

Sonar IFF
Submersibles may use a sonar-based (rather then radio-based) identification system. These are treated as standard IFF or transponder systems but have a range equal to a medium-range sonar communicator of the same TL.

Sonar Positioning System
Submarines may also have a Sonar Positioning System, which is similar to GPS (often useless underwater, as radio signals from the satellites cannot reach a sub), but uses active sonar transponders fixed to the sea bottom at known locations instead of satellites. Single units are sometimes used to mark important locations but they are more frequently encountered where several transponders are planted across a wide field. Submarines

within their own active sonar range can triangulate their position with GPS standard accuracy. This is most often used in scientific or salvage work where positioning is critical.

Sound Recorder
Advanced sound recording equipment which can be hooked up to the audio system. May use either tape, CD, DVD or Blueray.

Targeting Computer
Vehicles often incorporate computers that have been given this dedicated option and designed to run only targeting programs. This adds another +4 to Thac0.

Targeting Sight
Superimposes electronic crosshair reticules on a selected window which gives a +3 Thac0 bonus to hit.

Telescope
A telescope uses optical lenses to enhance human distance vision. It essentially does two things: it gathers light over a larger area of space allowing detection of fainter objects and it improves resolution allowing detection of finer detail. In darkness telescopes can only spot objects that emit light such as stars or lighted buildings, or are illuminated by other light sources like the moon or an object silhouetted against a light or source of reflected light. Telescopes are rated for their maximum magnification.

Thermo-imager
At the flick of a switch the windshield or any window equipped with this will switch to detecting changes in temperature radiated by objects over 500 feet away. While able to sense the infrared radiation emitted by objects warmer than 0 degrees, the instrument is particularly sensitive to the heat which is radiated by humans and animals. The relative intensity of the infrared radiation coming from the object, as compared to the background, is indicated on the LED bargraph display in the rear panel. The number of red LEDs will change according to target size, temperature, and distance. Temperature changes of 1 degree centigrade can be detected.

TMDRT System
Tactical, mobile, deployable radio and television broadcast system. Able to produce, broadcast, record and monitor commercial bands from fixed locations using broadband, directional and omni directional, antenna systems. Also has an electronic news gathering ability to produce, broadcast, record and monitor commercial quality programming using satellite uplink/downlink.

Video Detector
An LED bar-graph alerts you to the fact that you are under covert video surveillance quickly and noiselessly, the instant a video camera has been activated in your presence.

Weapon Detector
Detect all concealed metal weapons, including the smallest knives and guns. Range of 10 metres. It provides both an audio signal and a visual alarm light.

Section 4: Security Equipment

This section describes measures that are designed to deny access to unauthorized personnel (including attackers or even accidental intruders) from physically accessing the vehicle.

Alarm System
This alarm system has a second method of alerting its owner. When set off, it sends a signal to a beeper or cell phone along with activating the siren. The owner may choose to disable the siren and use the other method as the primary method of being alerted.

Cell Phone Interface
This device links to the vehicle's alarm, door locks, and any other devices that can be operated by remote. The device has its own phone number. By calling the device and entering the appropriate codes; you may switch off the alarm, open the doors, etc.

Encrypter
This encryption product ensures your e-mail, voice, fax, and data communications are secure.

Escape Pod
A short range emergency escape device for 1 person (it can even be the cockpit itself).

Fingerprint Lock
This device is a simple fingerprint scanner that can be wired into either the door lock/alarm system, or the ignition system. Multiple fingerprints can be loaded into the device and it can be updated in case of new ownership or users. More than one lock can be wired into the system with no need for additional software.

Ignition Kill Switch
When this modification is activated, the vehicle cannot be started through normal means. It also cannot be hot-wired. Until this modification is deactivated, the only way to start the engine must is by opening the engine compartment and someone with the appropriate skills manually starting the engine.

Keyless Entry
The vehicle is equipped with small numeric pads by two of its doors. Entering the appropriate code will open the vehicle's main doors. Entering a second code will open all the doors.

Self Destruct System
This causes the main power source to feed back on itself and explode with sufficient force to destroy the body. Bystanders take shrapnel damage over a radius as determined by the GM. If the engine is nuclear then the damage to a city could be significant.

Vehicle Remote Starter
This is actually two devices, a small transmitter that attaches to a keychain and a small receiver that attaches to the starter motor of the vehicle.

Vehicle Transponder
This is a small radio transceiver that is hidden somewhere on the vehicle. When the vehicle is stolen it can be activated so that those with the proper equipment, to detect the signal it transmits, can locate and recover the stolen vehicle.

Section 5: External Equipment

This refers to any equipment which can only be placed outside the vehicle mainly for executing construction tasks.

Articulation
This is an option for any vehicle with tracks, halftracks, or wheels. The vehicle body is jointed in the middle to allow a smaller turning area and improve performance over rough ground. This feature is common on very large vehicles.

Back Hoe
A backhoe also called a rear actor or back actor is a piece of excavating equipment or digger consisting of a digging bucket on the end of a two-part articulated arm. The section of the arm closest to the vehicle is known as the boom, and the section which carries the bucket is known as the dipper. The boom is attached to the vehicle through a pivot known as the kingpost, which allows the arm to slew left and right, usually through a total of around 200 degrees.

Cement Mixer Drum
This is a large rotating drum that keeps cement liquid as it is transported from a plant to a construction site for pouring. It uses engine-powered rotating fins inside the drum to mix the concrete, and includes a hydraulic system to tip the contents.

Cherry Picker
A cherry picker (also known as a boom lift, man lift, basket crane or hydraladder) is a type of aerial work platform that consists of a platform or bucket at the end of a hydraulic lifting system. The bucket is designed for a person to stand in and work from. Often a duplicate set of controls that are used to manipulate the position of the bucket will be available to the person in the bucket, allowing the operator to position himself. The lifting arms of some cherry pickers are capable of telescoping to adjust the reach of the device, usually with automatic safety controls to prevent tipping over.

Crane
A crane is a type of machine used for lifting, generally equipped with a hoist (device) (also called a wire rope drum), wire ropes or chains and sheaves, that can be used both to lift and lower materials and to move them horizontally. It uses one or more simple machines like a hoist to create mechanical advantage and thus move loads beyond the normal capability of a human.

Dozer Blade
A dozer blade is a substantial metal plate used to push large quantities of soil, sand, rubble, etc, during construction work.

Drill
Drills are used for digging holes at a rate of 30 metres per hour in earth or ice, half that for soft rock, 1/4 for hard rock. Decide on the maximum depth it can drill.

Dump Bin
A typical dump truck is equipped with a hydraulically operated open-box bed hinged at the rear, the front of which can be lifted up to allow the contents to be deposited on the ground behind the truck at the site of delivery.

Excavator
Excavators are heavy construction equipment consisting of a boom, bucket and cab on a rotating platform (known as the house). Excavators are used in many ways: Digging of trenches, holes, foundations, forestry work, demolitions, landscaping and river dredging.

Feller Buncher
A feller buncher consists of a standard heavy equipment base with a tree-grabbing device furnished with a circular saw or a shear - a pinching device designed to cut small trees off at the base.

Flatbed Tower
A bed that can be hydraulically inclined and moved to ground level, allowing the vehicle being towed to be placed on it under its own power or pulled by a winch.

Fork lift
A forklift (also called a lift truck, a fork truck, or a tow-motor) is a powered industrial truck used to lift and transport materials. In addition to a control to raise and lower the forks (also known as blades or tines), the operator can tilt the mast to compensate for a load's tendency to angle the blades toward the ground and risk slipping off the forks. Tilt also provides a limited ability to operate on non-level ground.

Grader
A grader is a long blade used to create a flat surface.

Grapple
A grapple loader is used for loading and sometimes hauling bulky waste. A hydro-mechanical device able to rotate on an axis with a grapple or bucket attached at the end of the boom, which is intended for the collection of waste that due to size and/or weight is impractical to containerize.

Harvesting Equipment
This is used to harvest and process field crops and includes reapers, combines, threshers, hay balers, corn pickers and shellers, and potato harvesters. Many types of harvesting equipment incorporate sharp blades: treat any frontal collision as doing cutting rather than crushing damage.

Hedgerow Cutter
A light triangular blade that may be attached to a ground vehicle. It is small and low enough that it does not impede firing like other blades. It enables the vehicle to cut a path through brush.

Integrated Tow
Boom and wheel-lift integrated into one unit. Used in light duty trucks to repossess vehicles or move illegally parked vehicles. Most have controls for the apparatus inside the cab of the tow truck to make quick pickup possible without the inconvenience of exiting the truck to hook up the vehicle.

Mower
This is used to cut grass or hay.

Multisection
This modification allows the vehicle to be broken down into modules for easy transport. A mechanic's toolkit is required to assembly the vehicle. Otherwise an actual machine shop or vehicle assembly yard is needed. Failure means the time was wasted, but another attempt may be made; critical failure means a vital part is damaged.

Pile Driver
A pile driver is a mechanical device used to drive piles into soil to provide foundation support for buildings or other structures.

Shovel
A powered scoop or shovel designed for digging and moving earth. Digging requires the attention of the operator (usually the driver). He cannot fire weapons or manoeuvre while operating the shovel.

Sidecar
A vehicle with standard, heavy or off-road wheels that has two wheels may be designed to accept a sidecar. A sidecar that is released while its vehicle is moving will crash unless it has a propulsion system of its own.

Submersible
This feature is required for underwater vehicles. Making a vehicle submersible equips it to dive and swim underwater. The body has control planes for steering underwater, a strong inner pressure hull and an outer shell containing ballast tanks and pumps to control buoyancy. While surfaced the vehicle is under the influence of positive buoyancy and floats. When moving submerged buoyancy becomes neutral by taking in water to allow the vehicle to stay at the desired depth. To dive or to rest on the bottom, negative buoyancy is achieved by adding water or diminishing air. This shape is optimized for swift underwater travel.

Transforming Steel
Separate section for creating transformable vehicles. The component can alter its shape and function, transforming into two or more pieces of equipment. The transformation requires only seconds. The cost is doubled if a third form is desired.

Winch
This is a winching mechanism fitted either externally or retractable and designed to lift or haul loads of up to 1 ton. A winch is a mechanical device that is used to pull in (wind up) or let out (wind out) or otherwise adjust the tension of a rope or wire rope (also called cable or wire cable).

Wrecking Ball
This is a crane with a wrecking ball instead of a hook. This prevents it from lifting things but allows it to do 7D6 damage. One attack may be made every three turns.

Section 6: Facilities
This section is for equipment used for amenities or resources.

Air-Recycling System
Allows for unlimited time in space or underwater or in impure air (gas,. pollution, etc.). The unit will recycle the vehicle atmosphere so long as power remains.

Cargo Bay
Each cargo bay space is equal to 25 cubic metres of storage space.

Dock
Per complete dock facility for storing and maintaining one boat of up to 10 metres. Can be rebought multiple times adding either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Elevator
Either passenger or cargo lifts. Passenger lifts can hold up to half a ton and Cargo lifts can hold up to 10 tons.

Fire Suppression System
This is a fire extinguisher system using inert gases to put out fires in seconds.

Galley
A well-equipped kitchen. Up to three people can work in it comfortably. The standard galley is adequate for up to ten passengers and crew. It includes a dining area. The seating area can be upgraded from standard to luxurious by doubling the cost.

Garage
Per complete garage facility for storing and maintaining one ground vehicle of up to 10 metres. Can be rebought multiple times either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Hangar
A hangar provides docking space and maintenance facilities for any 10 metre vessel. Part of the hangar includes hangar bay doors to the exterior of the vessel. Can be rebought multiple times adding either adding additional facilities, or doubling the size of the existing one each time allowing for larger vehicles.

Holding Cell
Standard holding cells are designed to incarcerate one prisoner (although they can be larger). The cells include security monitors and basic barred gates which have electronic locks. They have beds which retract/extend from the wall at the touch of a button and a small sink and toilet facility but little else.

Interior Lighting
Includes normal lighting, infrared lighting (for during combat) and emergency (dimmer) lighting.

Laboratory
For analysing biological, atmospheric and geological samples. Laboratories are almost always catered towards one of the sciences (biology, physics, chemistry, anthropology, astrophysics, psychology and so on). A laboratory is for study, analysis and cataloguing as pertinent to the relevant science covered by it.

Medlab
Fully equipped medical facilities for treating 1 person per ranking of lab.

Passenger Cabin
It comes with a bunk bed for one person. This can be upgraded to a proper bed. Two or more can be bought and connected to make a larger room to contain more people.

Pilot's Compartment
This is a pressurized crew cabin with a recycling air system.

Recreation
This represents one form of recreation for each time it is bought. It may include video games, pool tables, tennis courts, swimming pool, a stage, restaurants, running areas, parks/gardens, casino, etc.

Running Lights
These serve to both illuminate the outside of the ship when its dark and highlight its name, registration, etc.

Secret Compartment
Small secret compartments can built into the vehicle to hold tools, supplies, weapons, etc. The number of compartments depends on the size and type vehicle and size of the compartment.

Shower
A one-person shower.

Stairway/ Ladder
For standard use or in emergencies when elevators are not functioning.

Toilet
A typical vehicular toilet with a detachable tank.

Workshop
Workshops include basic machinery like drills, lathes, saws, raw materials, spare parts and so forth. Workshops however are not factories. Big constructions cannot be produced in them like vehicles and so forth. However tools could be made, weapons, armour or robots etc can be constructed providing the relevant parts or materials were available, but not in great numbers or speedily.

Section 7: Pilot Equipment

This section deals with any equipment specifically used by the driver or pilot.

Automatic Pilot
The automatic navigation system has the capability to plot and control travel to any pre-programmed destination. It keeps the vehicle on a steady course at a constant speed.

Ejection Seat
This specially built chair has built-in explosives designed to throw the chair and its occupant up and away from an injured vehicle. The parachute is designed to open automatically at the right altitude.

Ejection Seat Hover Vehicle
An ejection seat that is also a limited hover vehicle that functions like a jet pack. Maximum speed: 100 kph. Range: 20 kilometres.

Emergency Beacon
GPS emergency SOS repeater lasting 1 month. It can be detached and carried in your pocket.

GPS
Satellites orbiting the earth can track a person's whereabouts anywhere on earth within 10 metres accuracy. Lightweight and portable, the GPS can be detached and hidden in a jacket, briefcase, purse or backpack, to accompany you anywhere added personal protection is needed. Receiving printed reports and data analysis is easy, as well as generating information to aid in the rescue.

Voice Activated Controls
This system is designed to increase the response time and performance of a vehicle. Specific codes are assigned to certain routines, systems, or commands. +1 on initiative.

Section 8: Additional Equipment

This includes anything not covered in any of the other sections.

Extra D
The vehicle is larger inside than outside. Components placed in the vehicle's own pocket dimension do not interact with the world outside it. Extradimensional sensors, weapons, communicators, or drives that require interaction with the outside are rarely usable from within the pocket dimension unless they themselves work across dimensions (GM's option), but extradimensional quarters, cargo holds, or fuel tanks are common applications. The GM may also rule that certain systems, such as teleporters can operate even if stored extradimensionally.

At the GM's discretion, it may be possible to create dimensional windows that allow weapons, sensors, and drives to direct their emissions into real space. If the interface is damaged or powered down, the contents of the pocket dimension are inaccessible. The destruction of the dimensional interface may result in the components (and any one in them) being totally lost (GM's option). Alternatively the vehicle stores a component in another dimension, but on command it rotates back into normal space in a specific position relative to the anchor. Components can reappear interlocked with the vehicle as firmly as any other part, or be slightly detached from it.

Forensics System
This unit is capable of performing a full forensics including blood typing, fingerprinting, ballistics, chemical analysis, etc.

Grappler Mags
The grappler mag is a large, metal disk, which magnetizes and demagnetizes on command, attached to a length of heavy-duty tow cable. This disk is propelled out from the vehicle at great speed towards its target, magnetizing itself an instant before impact, and then firmly connects itself to the metal object which it is intended to tow. The line

can be drawn in or let out as much as necessary (up to the line's maximum length of 150 metres), and the disk can depolarize upon command from the ship.

Hitch
A vehicle can be equipped to tow another vehicle, or to be towed itself. A hitch is a hook, or other device that enables a vehicle to pull another vehicle. Attaching or detaching a hitched vehicle takes at least 10 seconds and requires exiting the vehicle.
Image Inducer Creates 3D holographic images of self or another prerecorded image which can be broadcast anywhere within 10 metres of the device. Up to 10 images.
Suction Grips Whichever section of the use its attached to can cling to any surface (except loose rocks, ice or any other slippery surface).

Tractor Beam
A beam of force that can attract or repulse any physical objects within 30 metres. Up to half a ton can be attracted or repulsed.

Utility Arms
Retractable miniature tools for sensitive work and repairs. They can be stored anywhere where space has been allocated for them. The cost of each pair of arms includes an external camera which shows the operator what the arms are doing.

Van Allen Bonds
This device changes all the radiation molecules within a 20 metre radius into separate and less harmful Radium, Actinium, Thorium and Protactinium molecules which then disperse into the atmosphere.

Water Flotation System
This system of air-filled cushions allows the vehicle deploying them to maintain a neutral buoyancy if it is forced to land in water. The cushions are filled either from compressed air bottles (in emergencies), or using the vehicle's life support system to provide the air.

Section 9: Defences

Defensive equipment is used in preventing attacks, or minimizing the damage of said attacks. It includes the use of protective materials such as armour, camouflage or screens.

Absorption Defense
Absorbs all incoming energy and uses it to recharge weapons and equipment up to a maximum of 100 damage per round before shutting down. Cost: $1 million per each different type of energy (electrical, solar, laser, fire, etc).

Anti-Missile System
When triggered, the system sends out a canister designed to decoy enemy anti-aircraft missiles. The canister heats up to attract heat-seeking missiles, sends out streamers of chaff designed to fool radar-guided missiles, and gives off a fake radio signal. The system contains 10 canisters.

Atmospheric Shielding
Additional coating to the skin which enables the vehicle to survive reentry into an atmosphere.

Automated Skin Sealing
The automatic sealing system is comprised of two separate layers of resin under high pressure in the skin. When the layers are breached the substances expand and mix to form a very durable foam-like patch.

ECM
Electronic Counter Measures. It causes detonation of all activated missiles in a 1 kilometre range which have been locked onto you.

ECM Decoy Probe
This probe includes an array of transmitters which are calibrated to broadcast an electromagnetic signature identical to yours. In effect this probe makes it appear as if two identical vehicles are in the area.

Electrified Surface
This feature is sometimes given to anti-riot vehicles, to discourage rioters climbing up on them. It is also useful for keeping animals away, and discouraging people from tampering with the vehicle. Conductive wires are embedded in the vehicle surface and the system can be set for stun or kill. When turned on any grounded object touching or touched by the outside of the vehicle will take D6 damage if set to stun or 8D6 damage if set on kill. An electrified surface may be designed to activate if a burglar alarm detects tampering with the locks.

EMP Ball
A small spherical object which interrupts all electrical synapses within any electrical equipment it is attached to (has magnetic clamp) effectively destroying it.

EMP Blaster
As above but treated as Electro Magnetic Pulse burst with range of 45 metres destroying any unhardened electrical equipment and temporarily rendering inoperative any hardened equipment. Cost: $2 million

Flare System
When triggered, it sends out flares designed to decoy enemy heat-seeking, anti-aircraft missiles. The system contains 15 flares.

Forcefield Device
Generates up to 300 HPs in the form of a small 1 metre diametre shield which can be generated anywhere over the vehicle within 1 metre of the device. The HPs are continuously regenerating for up to 4 hours before requiring recharging.

Hardened Circuits
The vehicle's electrical and computer circuits have been hardened to withstand the effects of EMPs.

Intangitator
Makes the air full of electricity. Though at a non lethal level it does agitate the molecules within the area sufficiently to force anyone intangible to turn solid. A portable version is also available but requires a power source.

Minesweeping Roller or Flail
A heavy rotating drum or motorized flail with metal chains. It is designed to detonate mines in front of the vehicle. It may not be mounted on a vehicle that already mounts a plow, hedgerow cutter, or bulldozer blade, and the vehicle may not fire front mounted weapons (but may use turret-mounted weapons normally) except when the minesweeper is swiveled up (in which case the situation is reversed). The minesweeper detonates pressure trigger mines as if the minesweeper weighed 10 times the vehicle's normal loaded weight.

Oil Slick Sprayer
The driver can release oil from a tank mounted on the underside of the vehicle It contains enough oil for three slicks. Vehicles driving over the oil must make a control roll at -5.

Radiation Shielding
Completely stops harmful radiation of all kinds and levels.

Reflective Hull
Reduce damage from energy weapons by 10%, it is simply coated over any normal hull.

Roll Cage
A cage of hardened supports that fits inside the passenger compartment of vehicles.

Smoke Screen
The pilot can release smoke by changing the fuel mix in the engine. Available only for conventional automobiles and aircraft.

Stealth Cloak
Makes the user invisible to radar and all forms of electronic tracking devices (but not metaabilities or magic).

Stealth Mode
A white noise generator has been installed in the vehicle. When activated it emits sound frequencies designed to mask the operating noise of the vehicle.

Section 10: Weapons

Vehicles can be armed with a wide variety of built-in ranged weapons, such as guns, launchers and beam weapons. When installing a weapon the character must specify

whether it points forward, backward, right, left, up or down; this determines the direction it can fire. Of course, a weapon in a limited or full rotation turret or open mount can fire in different directions as the turret or mount itself rotates.

Mechanical artillery, guns and launchers all require ammunition. Ready to fire ammunition must normally be located in the same location as the weapon that fires it. If the weapon is in a turret, open mount, superstructure, arm or leg, the ammunition can also be located in the part of the vehicle that subassembly is supported by. Ammunition can also be stored in cargo spaces. This ammunition cannot be used immediately, but can replace fired ready shots if several minutes are spent to unpack and replenish ammo. Ammunition can be stowed in the body, superstructure, pods, turrets, open mounts, arms or legs.

2.75" Rocket Launcher
Payload: Loaded in pods with 7 or 19 rockets
Damage: 3D4 x10 to a 6 metre radius
Range: 1500 metres

Aircraft 30mm M230
Chain Gun as described in the vehicle weapons section.

Aircraft General Electric 20mm M61A1
Vulcan 6 Barrel Rotary Cannon as described in the vehicle weapons section.

Aircraft General Electric 25mm GAU-12/U
5 Barrel Rotary Cannon as described in the vehicle weapons section.

Aircraft General Electric 30mm GAU-8/A Avenger
7 Barrel Rotary Cannon as described in the vehicle weapons section.

Aircraft Missile
As described in the vehicle weapons section.

Bomb Dispenser
The Bomb Bays and dispenser system is designed for the purposes of dropping bombs from a high altitude. Bombs have no form of targeting or guidance, instead the computer aims from orbit and drops the bomb, all other bombs then scatter around the first. The smallest version holds 1 and it can be bought in increments of 1.

Flamethrower
As described in the weapons section.

Frigex Cannon I
Special cannon which freezes the air around a victim encasing them completely with the same effects as per the Ice power with range of 10 metres.

Frigex Cannon II
Same as above but fires Ice shards instead which do 3D10 each, up to 1 shot per melee.

M1A2 Abrams Tank Cannon
Approximate Effective Range: 120 metres
Damage: 6D20 per shell

M2A2 Bradley Tank 25mm Cannon
Approximate Effective Range: 105 metres
Damage: 8D6 per shell

MiniGun
As described in the vehicle weapons section.

Missile launcher Pods
A Missile Launcher Pod with a payload of 2 missiles. Payload can be increased in increments of 2 each time.

Naval Depth Charge
As described in the vehicle weapons section.

Naval Mine
As described in the vehicle weapons section.

Naval Missile
As described in the vehicle weapons section.

Naval Ship Artillery
As described in the vehicle weapons section.

Naval Torpedo
As described in the vehicle weapons section.

Ram Plate
Any collision with the ram plate inflicts an extra +1 per die on the object hit, and -2 per die to the vehicle using the ram plate.

Sonic Disruptor
The disruptor releases a concentrated sonic blast against opponents which leaves them –6 and -25% until it stops, plugging ears reduces the effects by half. 2D6 over 90 metres.

Vehicular Caltrops
This piece of equipment is a device holding a container of heavy duty caltrops. The container can be opened by the driver, releasing the caltrops across the road surface. The container can removed so it can be refilled. Damage: 2D6

9. Transforming Steel

A transformable vehicle requires the purchase of two vehicle bodies (+10% to both costs). One for the robot form (usually humanoid), and one for the other form (usually vehicular). Use the chart below to select the appropriate body.

Note: All of these forms may be ridden in or piloted in vehicular form. When you purchase the Piloted Humanoid Body option, you are paying for a redesign in the transformation process which retains the pilot compartment. This only applies to the front seat. Any equipment, passengers, etc. which is in the back seats must be vacated, or it is crushed.

An additional form may be selected, but there are limitations. First the cost of the second body is 20 points. Second the new form must be comparable in size to the other transformed form so a robot who turns into a jet could not also become a compact car.

Running speed is purchased for the robot form, and does not affect the vehicular form Automobiles do not purchase an engine, each wheel has its own motor (this is included in the 10% transformation cost). Initial speed is 70 KPH. Maximum speed is 300 KPH. Vehicular speed is purchased normally and does not affect the robot.

A note concerning HPs and AC. The same HPs are applied to each form. In either form, these HPs applies to the main body. The maximum HPs available is the average between the maximum HPs of each form. AR must be bought separately for each form.
Main Body: 100% of HPs, Arms: 30%, Hands: 15%, Head: 15%, Legs: 50%, Feet: 25%.

Disguised Form	Humanoid Height
Animal	2-8'
Aquatic Vehicle: Jetski	6'
Aquatic Vehicle: Large Ship	20'+
Aquatic Vehicle: Small Boat	7-15'
Cassette/CD Player	1-3'
Commercial Jet or Airliner: 747, cargo plane, etc	27'-40'
Construction vehicles: land movers, cement mixers, etc.	18-24'
Dinosaur	6-12'
Fighter Plane: F-14 Tomcat, F-15 Eagle, MIG 27, etc	22'-26'
Insect	1-2'
Jeep	15-17'
Motorcycle	6-8'
Racing Car	13'
Scientific Equipment: Microscopes, etc	1-2'
Sedan	13-15'
Small Aircraft: bi-plane, stunt plane, etc.	20'-24'
Space Vehicles: shuttles, spaceships, etc	35'+
Sports Car	14'
Standard Car	12'
Stunt Fighter Plane: F-15 Blue Angel and others of this type	21'-25'

Disguised Form	Humanoid Height
Tank	18-24'
Train (does not always need railroad tracks to transform)	20'-30'
Truck	19'-30'
Utility	16-18'
Van	16-20'
Weapon: guns, futuristic cannons, etc	1-10'

Motorcycles, jetskis and other vehicles of similar size can only transform into humanoid robots or suits of power armour. It is important to note that a motorcycle with an AI still cannot pilot itself without a rider (the balance is wrong).

Most piloted automobiles use the following format: The front of the car forms the legs, the driver's seat area becomes the "head", the rear of the car forms the back of the torso. Arms fold out from under the chassis during transformation. Any missile launchers or other heavy weapons are shoulder or back mounted in robot form, and concealed in the trunk area in vehicular form. Most non-piloted automobiles use a similar format, except the middle of the car (including the driver's seat) folds over to become the front of the torso, and a head emerges. The head is in the trunk area in the vehicular form.

Semi trucks (must use super vehicle template) use the following configuration: the front of the cab forms the main torso, arms and head, and the rear of the cab forms the legs.

Jet aircraft use the following configuration: the rear of the jet forms the legs, with one thruster being located in each foot. The arms fold out from the middle of the jet, just under the wings. The cockpit either folds over and faces downward to become the front torso (with a gyroscopically reoriented pilot's seat that moves to a new, upright position) or moves into the head position and remains upright. The wings either fold over to the back and face straight backward, move to the back and face outward, or move to the back into a swivable configuration (this method is used if the jet has wing-mounted missiles or guns) If heavy weapon systems are installed on the robot, then the player may select one or two of them (one is recommended) to transform into a handheld weapon to be used in robot form.

10. Transforming Steel Gestalt

These vehicles are all able to combine to form one larger robot.

Step 1: Create the component robots

Create five or six vehicles using the standard rules for vehicles or transformable robots. If five vehicles are created, then the one which will become the torso must be larger than the others (ie: a giant humanoid and four basic humanoids). If six vehicles are created, then they are all the same basic size, and two of them combine to form the torso. All vehicles which form the gestalt must use reinforced frames.

Step 2: Assign the vehicles as components of the gestalt form

This step involves purchasing a third form for each vehicle, which will cost an extra 20 points each. With legs the foot and a special shin guard type armour are only available in gestalt mode. This armour has 50% of the vehicle's HPs (ie: a vehicle with 500 HPs would have a 250 HPs armour plate) and only protects the lower leg. With arms the hand (25% of vehicle HPs) and a forearm armour plate which has 25% of the vehicle's HPs are also only available in gestalt mode. A robot converting into a torso gains an armour plate which protects the torso with 75% of the vehicle's HPs. Likewise this is only in gestalt mode. For an additional 20 points a head can be installed as well. The head may have giant vehicle eye weapons and has 25% of the vehicle's HPs.
Note: The gestalt vehicle armour is not available to the vehicles in their individual forms because it is too bulky and ungainly.

Step 3: Purchasing HPs and AC for each component

To purchase HPs and AR for each component, purchase the points as normal (but at 1/4 price), but only apply them to the gestalt form (you are buying improvements to the armour plate). Limbs and half torsos can only receive HPs and AR equal to the limit of their individual forms, but full torsos can receive armour up to 200% of their maximum HPs and 2 points above their maximum AR.

Step 4: Purchasing STR and MR

The STR and MR attributes are purchased for each component. These attributes have nothing to do with individual vehicle's attributes. All limb modules begin with a STR of 20, and legs begin with a MR of 22. Flight is a possibility for the gestalt form.

Step 5: Sensors and Weapons Systems

The gestalt form has access to all sensors, but each version of a sensor is only counted once when determining bonuses. The gestalt form also has access to the weapons built into the torso. The gestalt form does not normally have access to the weapon systems built into the limbs (they are covered by armour), but any weapons may be configured to function in gestalt mode.

Step 6: Assigning control of the gestalt robot

If the vehicles are to be piloted by humans then the gestalt form should be controlled by the pilot of the upper torso. If the vehicles are to be controlled by AI then it is up to the players and/or GM whether the gestalt form is to be controlled by the upper torso or by a combination of all of the vehicles. If these vehicles are to be player characters, then I would suggest making the vehicle controlled by the main module. Another option is to have an AI which is only used by the gestalt form. If the AI combine to form the gestalt form's mind, then the Split Personality rules found in the Insanity section may apply (GM's call). In this case, the gestalt AI is the main personality and each component has a 25%. Fortunately the computer system is able to handle this problem and the gestalt AI will regain control in D4 melees.

A note on Gestalt Vehicles

Gestalt vehicle transformation is much easier if the upper body parts (torso and arms) have flight capabilities. Otherwise, the robot will have to form lying down, and then get up (which takes 4D4 melees). Gestalt robots may be forced to disengage by powerful attacks. An attack to the torso which inflicts 10% or more of that module's total HPs has a 60% chance or causing a disengagement. Humanoid robots may transform into guns for the gestalt robot. Use standard transformable vehicle rules and purchase a basic humanoid body. Humanoid robots may also form the head of the gestalt robot. In this situation, the vehicle which becomes the head takes control of the gestalt form.