

Megatraveller House Rules

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Attributes DM for tasks

(roundup(stat/3))-2

Divide stat by 3, round up, subtract 2

Stat	DM
1,2,3	-1
4,5,6	0
7,8,9	+1
A,B,C	+2
D,E,F	+3
G+ (PC IMP)	+4

Physical Stats

Kg Weight	Duration	Effect
Str x 1	all day	UNENCUMBERED
Str x 2	all day	ENCUMBERED (-1 all phys stats)
Str x 3	all day	ENCUMBERED (-2 all phys stats)
Str x 5	Five minutes	ENCUMBERED (-3 all phys stats)
Str x 10	Can lift 1 minute	Can't do anything else
Str x 15	Can drag 5 minutes	Can't do anything else

Gravity effect: divide Str by G, i.e. Str 7 on 0.125G worlds equal 56 Str

End x1	Waking hours until fatigued.
End x3	Waking hours until must sleep

When fatigued -1 end every 2 hours, rest 2 hours + 1 end, end =0 must sleep.

Sleep 8 hours: normal; Sleep 4 hours; End restored by fatigued. Sleep 1 hour: ½ end

Mishap

A mishap occurs when:

- the task is fateful and fails
- a natural 2 is rolled and the task is not safe, and not (easy taking extra time.)
- failed by 2+ points (4+ is what I use).

Unskilled weapon use

If a player has a skill level of 1 or greater in a weapon skill and tries to use another weapon of the same "difficulty as" type and receives basic instruction (or has a chance to practice) then let them have an effective skill level of 0

Armor

Type	TL	Kg	Value	Dex	Notes/ air supply	Cr
Jack	1	1	1		HTH only	50
Mesh	7	2	2	-1		150
Flak Jacket	7	1	3			100
Cloth	6	2	5	-2		250
Ablat	9	4.5	1 [6]		6 against laser	75
Reflec	10	1	10		Laser only can be combined	1,5kcr
Vacc- Suit	8	8/15/22.5	4	-3	10min/4hr/24hr	7kcr*
Vacc- Suit	12	2/13/18	5	-2	10min/4hr/24hr	7kcr*

Vacc- Suit	14	1/1.5/3/	6	-1	Self Sealing 10min/12hr/24hr	13kcr*
Body Pressure Suit	10	0/7kg	1		10min/4hr/24hr	12kcr*
Hostile Env Vacc Suit	8	35/42/49.5	5	-3	10min/4hr/24hr	12kcr*
Hostile Env Vacc Suit	9	40/47/54.5	6	-3	10min/4hr/24hr	16kcr*
Hostile Env Vacc Suit	12	40/44/51	7	-3	10min/4hr/24hr	18kcr*
Hostile Env Vacc Suit	13	10/14/21	8	-3	10min/4hr/24hr	20kcr*
Hostile Env Vacc Suit	14	25/25.5/27	9	-2	10min/12hr/24hr	150kcr*
Combat Env Suit	10	10/17/24.5	6	-2	10min/4hr/24hr	1kcr*
Combat Armor	11	18/25/32.5	8	-3	10min/12hr/24hr	20kcr*
Combat Armor	12	10/14/21	10	-2	10min/4hr/24hr	30kcr*
Combat Armor	14	6/6.5/8	18	-1	10min/12hr/24hr	60kcr*
Battle Dress	13	26/30/37	10		Effective: Str x2 End x3 10min/4hr/24hr	200kcr*
Battle Dress	14	12/12.5/14	18		Effective: Str x2 End x3 10min/12hr/24hr	350kcr*

*add cost of life support (3 or 5kcr)

Life support systems

TL	Duration	Cost
8	4	3000
8	24 (recycle)	5000
12	4	3000
12	24 (recycle)	5000
14	12	3000
14	24 (recycle)	5000

Vacc Suits

Armor Value

The armor values for Vacc Suits in MT seem a bit high; reduce all vac suit armor values by 1 (already adjusted in above table)

Breaches

Some vac suits are self-sealing when breached, and others are not. The higher tech level suits are the ones that tend to be self-sealing.

TL 12 or under: Not self-sealing.

TL13 or greater: Self-sealing.

As long as the hit is only low penetration ($Pen < Armor \times 2$), a self-sealing suit will seal the hole. The suit's occupant still takes the hit point damage, however.

For example, if the wearer of a TL15 vacc suit (armor value 7) gets hit by a gauss rifle round (penetration 7 out to very long range), the resulting hit is a low penetration one (since the rifle penetration is equal to the suit's armor value, but less than twice the suit's armor value). A low penetration hit does 50% damage, which means the gauss rifle's basic three hit points becomes one hit point $\{3 \times 0.5 = 1.5$, which is just one since we ignore fractions). The low

penetration hit on the tech 15 vacc suit self-seals. but the wearer still takes the one hit point of damage.

It. on the other hand the wearer or the TL15 vacc suit was to be hit with a laser rifle-13 (penetration 20 out to medium range), the hit (it at medium range or less) would be a high penetration one resulting in the wearer taking the laser rifle's full damage of 3 hit points. In this case, the 3 hit points breach the suit, and it must be patched to stop the leak.

While exceptional success may change the amount of damage made on the suit's occupant, exceptional success does not change the penetration level. For example, exceptional success may result in a hit that does two points of damage to the wearer of the suit, but the hit remains a low penetration one, and the suit still self seals.

On a pinpoint hit or a hit on a target under cover, however, damage is computed by first dividing the armor value by two, which could result in a high penetration hit (the helmet face-plate has been hit, for instance). A self sealing suit does not automatically seal on a high penetration hit.

Patching a Breach:

Once a characters suit has been breached, the critical priority becomes getting a patch on the hole before too much internal suit atmosphere is lost. Nearly all suits include a pocket with a patch kit (five patches} . Patching a suit involves getting out a patch, peeling the protective sheet from the patch's adhesive backing. and slapping on the patch.

See the following task:

To apply a patch to a breached vacc suit:

Routine, Dex, 2 sec

Referee; Since a combat round is only six seconds long, be sure to roll for the time duration (it could take more than one Combat round to gat the suit patched). The suit occupant may try this task it still conscious (however, see Panic, below).

If the suit has not been patched after the first combat round ,apply one hit point of damage per round to the suit occupant until the suit is patched. Do not apply any damage on the round the suit is patched. Panic (Optional): When a breach occurs, have the suit occupant first roll a determination task to keep from panicking. If able to avoid panicking the suit occupant can try to patch his own breached suit.

Jack of All Trades

Jack of All Trades allows each skill level to be used once per gaming session as any other skill level. Someone with JOT should be considered a kind of renaissance person who had just picked up bits of knowledge here and there, but couldn't use it consistently.

Thus, a character with JOT who needed to get the jump drive back on line while running from a corsair might be able to say, "Ya know, I remember once in the Navy, we had a jammed hyper-conduit, and we used the Petty Officer's tie clip

and a beer bottle to..." and pull a level of engineering (essentially) out of nowhere.

Trouble is that this would not extend to any real skill in the area. He could use this as a single trick for the adventure, but he would have exhausted his "one trick pony" for that session, and could not get any more benefit from Jack, until the next time we played.

Normally limited it to level 1 skill rolls only, up to the JoT level per session. That way you don't get anyone doing anything patently ridiculous, however allow higher levels of temporary skill if the player was to come up with a good enough explanation...

"Aneurysm - okay, there's these three Aslan pressurepoints, here, here and here, I heard once - got any dust-spice? Good, now gimme that fork and, *ting* good resonance, hit all three points when you release the powder and that should clear up the aneurysm before it kills him. I think." Hey presto temporary medic 3

Ridiculously difficult to duplicate, circumstantial series of events that solve the task/problem/skill roll at hand without being the *actual* skill.

March Harrier In System Costs

5l/hr Fuel

140cr/hr

Make Routine Pilot/Nav/Eng edu rolls

Success as per book

Exp. Success – 3%time

Fail +3% time

Exp Fail +6%

Fumble +10% (mishap table)

Minimum Fuel Purification plant TL11

Cr 16,150

7 Tonnes/95kl

(67.2) 2.8days to purify full tank

Jump Shadow

Stellar radius in Au x 0.93

Look at Au distance of destination planet and subtract that from the Stars jump shadow. If positive then that is the amount that must be travelled after jump. If negative use only the planet's size as distance determinate

COMBAT

DEFINITIONS

Combat Round

Combat is resolved in rounds. Each combat round represents six seconds of elapsed time.

Distance Scale

Combat uses a scale of 1.5 m per square (or hex). 15m per square can be used for outdoor and large-scale combat

Unit

Refers to a single character, non-player character, animal, robot or vehicle. Each unit is allowed an opportunity to move and to attack during a combat round.

Range

For convenience, personal combat divides distances into a series of range bands.

Range Bands		
Band	Distance	1.5m squares
Close	< 1 m	0
Short	1 m to 5 m	1 - 3
Medium	5 m to 50 m	4 - 33
Long	50 m to 250 m	34 - 83
		15m squares
Very Long	250 m to 500 m	17 - 33
Distant	500 m to 5 km	34 - 333
Very Distant	5 km to 50 km	334 - 3333

Tasks

Combat activities use tasks. Most combat tasks have a time increment of one round. In personal combat, most tasks are *non-repeatable, no-failure* tasks: Ignore rolling for failure or mishaps unless a fumble (a natural 2) occurs.

PERSONAL COMBAT

An Overview of Combat

At the beginning of a combat encounter, a marker or miniature figure representing each unit is placed on the playing surface.

Personal combat involves successive attacks (such as blows if brawling, swings with blade weapons, or shots with guns) by each unit.

A basic *to hit* task is used to obtain a hit; the basic task is modified by range between the attacker and target, the type of weapon used, attacker expertise in the weapon, and other factors. If a hit is obtained, the weapon's penetration is compared to the target armor to see if any damage results. Damage depends upon the type of weapon. Combat continues until one party is vanquished, flees, surrenders or is destroyed.

The Hits Value

Combat uses *damage points* to determine the effect of hits during combat.

How likely a unit is to survive damage points is indicated by the unit's *hits* value. The hits value for all units works the same: each hits value is a set of numbers separated by a slash. The first number indicates how many damage points it takes to render the unit out of action (i.e. unconscious or inoperative) and the second tells how many more points it takes to kill or destroy the unit.

The number of damage points varies with the weapon and hit. For example, a dagger inflicts 2 damage points.

After the combat session is over, the player characters and *important* NPCs, robots or vehicles must assess damage inflicted and seek the needed medical treatment or repairs. (See *Assessing Damage* for details.) Should a character enter combat before healing back to full Life Force then new hits values should be calculated.

The Life Force and Hits table shows the hits value for each value of Life Force (Strength + Dexterity + Endurance). The Minor and Major Columns indicate the amount of damage required for each effect column on the hit locations table.

Life Force and Hits			
Life Force	Hits Value	Minor	Major
3+	1/1	1	2
6+	2/1	2	3
9+	2/2	2	3
12+	2/3	2	4
15+	3/3	3	4
18+	3/4	3	5
21+	3/5	3	5
24+	4/5	4	6
27+	4/6	4	7
30+	4/7	4	7
33+	5/7	5	8
36+	5/8	5	9
39+	5/9	5	9
42+	6/9	6	10
45+	6/10	6	11

Hit Location

When a character is damaged the GM can specify that a hit location for the damage be rolled on the *Damage hit Location and effect* table. Use the *Life Force and Hits* table to determine if a major or minor effect should be applied, otherwise use superficial. If the Right/Left column has a Yes value, either determine randomly or by facing. Players should make notes of locations injured and effects. Separate wounds heal and effects resolve at GM discretion

Damage hit Location and effect

Roll	Location	Superficial	Minor	Major	Right/Left
11	hand	Drop items	Frac	Impd/Amp	Yes
12	wrist	Drop items	Frac	Impd/Amp	Yes
13	lower arm	Drop items	Frac	Impd/Amp	Yes
14	elbow	Drop items	Frac	Impd/Amp	Yes
15	upper arm	Drop items	Frac	Impd/Amp	Yes
16	upper arm	Drop items	Frac	Impd/Amp	Yes
21	shoulder	Drop items	Frac	Impd/Amp	Yes
22	shoulder	Drop items	Frac	Impd/Amp	Yes
23	cranium/ear	Stuns 1 rd	Frac/Conc	Brain	Yes
24	cranium/crown	Stuns 1 rd	Frac/Conc	Brain	No
25	face/eye	Stuns 1 rd	Fract/Impd	Brain	Yes
26	face/jaw	Stuns 1 rd	Fract/Impd	Throat 1p/r	No
31	neck		Throat 1p/r	Spine	No
32	top of torso		Frac	Spine	No
33	top of torso		Frac	Artery 2p/r	No
34	upper torso		Frac	Artery 2p/r	No
35	upper torso		Lung 1p/r	Heart 2p/r	No
36	mid-torso		Lung 1p/r	Spine	No
41	mid-torso		Lung 1p/r	Artery 1p/r	No
42	upper abdomen		Intl 1p/r	Intl 2p/r	No
43	upper abdomen		Intl 1p/r	Intl 2p/r	No
44	lower abdomen		Intl 1p/r	Intl 2p/r	No
45	lower abdomen		Intl 1p/r	Intl 2p/r	No
46	pelvis		Frac	Spine	No
51	groin		Impd	Intl 1p/r	No
52	hip/buttocks		Frac	Impd hip	Yes
53	hip/buttocks		Frac	Impd hip	Yes
54	upper leg	Fall	Frac	Artery 2p/r	Yes
55	upper leg	Fall	Frac	Impd	Yes
56	above knee	Fall	Frac	Impd	Yes
61	above knee	Fall	Frac	Impd	Yes
62	knee	Fall	Frac	Impd	Yes
63	shin/calf	Fall	Frac	Impd	Yes
64	shin/calf	Fall	Frac	Impd	Yes
65	ankle/heel	Fall	Frac	Impd	Yes
66	foot	Fall	Frac	Impd	Yes

#p/r = character receives additional points of damage per subsequent round, until medical attention received. At referee's discretion, extra damage may cease before character dies.

Drop Items = may not be automatic.

To keep hold of item Routine Dex Negative DM: the damage received

Stun = Stunned characters may not attack or move for 1 round, longer in the case of more serious wounds. May require rest to recover fully.

Fall = May not be automatic. May incur extra damage, usually 1pt, depending on situation.

Frac = Fracture. Referee may determine specific bone fractured.

Impd = Impaired function.

Conc = Brain concussion. May be mild, causing headaches, or serious, causing migraines, dizziness, seizures, etc. Severity increases if character loses consciousness.

Lung = Lung puncture, causes additional damage. Usually accompanied by fractured ribs.

Throat = Throat wound impairs breathing, causes additional damage.

Intl = Internal organ hit, causes additional damage.

Brain = At referee's discretion, effects may include partial or total paralysis, coma, speech impairment, blindness, personality change, seizures, etc, depending on amount of damage taken and swiftness of medical attention.

Spine = Almost always causes paralysis. Extent and severity to be determined by referee

Heart = Heart injury causes additional damage. Usually accompanied by fractured ribs.

Artery = Major artery hit, causes additional damage.

Amp = Potential amputation; if large amount of damage received in a single hit, amputation may occur, at referee's discretion. If so, character receives further 1 to 3 pts damage per subsequent round until medical attention received. Energy weapon hits do not incur extra damage, as wound is automatically cauterized.

Referee should use judgment at all times to determine specific location/effects. For instance, a Superficial Wound to "cranium/ear" is clearly a head hit close to the ear, whereas a Minor or Major Wound could mean skull fracture, impaired hearing, or concussion, perhaps all three, depending on the amount of damage received.

For hits from automatic fire, shotguns, or explosives, it is generally assumed that the rolled hit location is for the most serious of a group of wounds (which are not rolled).

Vehicles and robots have three types of hits values: structure, power plant and locomotion. Computing the hits values for vehicles and robots is discussed in the vehicles design section of the *Referee's Manual*. Vehicles may also take damage to crewmembers;

both vehicles and robots may take damage to onboard electronics and other such fixtures or devices. Assessing vehicle and robot damage is covered in the *Referee's Manual*.

The Effects of Tactics Skill

Before a combat session begins, total the Tactics skill levels from among the participants on each side. This total is the *tactical points pool*. Tactical points form a special *roving DM* on any combat task roll. An individual must specify the number of tactical points he intends to use as a modifier before he proceeds with making the roll. Once a tactical point is expended, it is used up for the combat. The tactical point pool is received anew each combat. Any unused tactical points at the end of the combat are lost and may not be carried over to the next combat.

Characters do not have to contribute all their tactics skill as points to the pool. They may hoard some of their tactics skill for themselves, creating their own private tactical pool. This may sometimes be out of character, however.

An individual can only draw on the tactics pool if they are in communication with the rest of the group. Similarly, an individual can only contribute their Tactics skill to the pool if they are in communication with the rest of the group. A special Communication task roll may be required to simulate the instructions given to the character by their party.

If the referee feels the tactics pool is being abused, they may impose this optional rule: the size of the tactics pool cannot be greater than the highest Leader skill in the group. Note that character's Tactics skill levels do not actually change as a result of contributing to the tactics pool. Their skill levels remain the same, and may be used if the referee calls for specific Tactics task rolls during the encounter.

Tactical points may *never* create a roll modifier that exceeds the total task DM limit of plus or minus 8.

THE COMBAT PROCEDURE.

Surprise

At the beginning of the encounter, the party to make the first hostile move determines if it has surprise.

Initiative

In each combat round each side rolls a D6 and adds their tactics pool and highest leadership score. Tactics and leadership bonus are only available if communication possible. If two sides tie then roll a die to resolve order amongst the tied sides. The side that has the highest value determines which side goes first.

Leadership bonus only possible if more than 2 members in party and leadership accepted. The leader then determines the order characters take their turns. If characters wish to take their turn in a different order then tactic pool benefits may not apply and leadership skill bonus may not be available in future combats. When there are multiple sides involved in a combat, care should be taken to record the initiative rolls as the initiative order can determine interrupt and turn taking order.

Resolution

Units take turns in their side's initiative order to make moves. Once a side has been selected, one unit from that side may take its turn. The unit may move and make an attack (limited to one attack per unit per combat round). Any attacks made take effect immediately. Once the unit's turn is finished, one unit from the other side may make a turn. Turns continue to alternate from side to side in this manner until all units on both sides have had an opportunity to take a turn. Once all have had a chance to take their turn, the combat round is over and a new combat round begins.

Combat Actions

During its turn a unit may move, fire weapons or (for characters, animals and robots) conduct hand-to-hand combat. Within limits, a unit can interrupt another unit in the middle of its turn.

A character's turn is made up of two parts, a move action and a combat action.

SURPRISE

Surprise is determined only once per combat encounter. Surprise is possible for either party, and the element of surprise gives an advantage both in attacking and in avoiding the enemy.

The party that makes the first hostile moves rolls surprise.

To determine if an attacking party has surprise:

Difficult, Leader, Recon (confrontation) (unskilled ok)

Referee: Success provides the attacking party with *surprise*. Use the best Leader skill level and Recon skill level from the party. This is a confrontation task; both parties contribute DMs to the task. If this task fails, both parties are aware of each other. If exceptional failure occurs, the *defending party* has surprise instead.

In most attack situations the chance of surprise is Difficult. The referee must weigh each situation and set the difficulty accordingly. For example, if the defending party has no reason to expect an attack, the surprise task may become Routine. On the other hand, if the attacking party consists of a bunch of noisy thugs rushing a defending party of highly skilled commandos, achieving surprise may be Formidable.

A party with surprise may elect to end the combat situation before it even starts by so stating. Non-player character parties that have surprise and are outnumbered usually avoid the combat encounter.

Benefits of Surprise

A party with surprise may freely attack until surprise is lost. The surprised party continues with the action that they were performing before the combat occurred and cannot attack in return. Members of the attacking party may each make one surprise attack. If surprise is not lost, each member of the party may make another surprise attack (this continues until surprise is lost).

Surprise is lost when any unit in the defending party gives the alarm. All non-silenced shots alert the enemy to an attack; silenced pistols, laser weapons and guns in vacuum do

not make any noise when fired. Any unit that is hit but not rendered unconscious or inoperative will make sufficient noise (such as a scream) to raise the alarm.

If the alarm is not raised, an unattacked unit in the defending party may see the attack and give the alarm.

To raise the alarm in a surprise attack:
Difficult, Leader, Recon.

Surprise continues until it is lost and may continue indefinitely. When surprise is lost the combat round ends; the attacker may make no more surprise attacks and normal combat begins.

INTERRUPTS

A unit from the opposing side (which has not yet taken a turn) can choose to *interrupt* another unit's turn and take one action of its turn in the middle of that unit's turn.

To interrupt another unit's turn:
Routine, Movement speed (safe).
Referee: If this task is successful, the interrupting unit can take an action. A failed interrupt roll doesn't count as a spent turn, but the unit must be the next to go of its side. Ignore mishaps.

The interrupted unit gets to complete its turn after its interrupter has finished (if it is able)
The interrupted unit cannot interrupt anyone else this combat round until after the interrupt is over.

Interrupts are subject to these restrictions:

- Only one active interrupt is permitted per side.
- A unit currently engaged in hand-to-hand combat may not interrupt anyone other than his attacker.
- Only one interrupt per side is permitted per enemy attack or per square of enemy movement.
- Unintelligent animals never perform an intelligent interrupt. An animal that, by nature, leaps at its prey will interrupt by jumping at a man, although that man is fully protected by combat armor. An animal that by nature flees at loud noises will interrupt to run away from a defenseless human who is yelling at the top of his lungs
- If an interrupted character or a character that declared an interrupt and failed wishes to alter their declared action due to the altered circumstances of the interruption then they have to succeed at a routine Dex task or else they have to follow through with the interrupted task.
- An interrupting unit only gets to perform one of two parts of their turn action (move or attack) and has to wait for their turn for the rest of their action.

Interrupt Examples

The players are fighting a group of NPCs on a starship. It is the player's turn. One of the player characters, Dur Telemon, takes his turn.

Dur decides to run from cover at the end of the corridor to an inset doorway closer to the enemy and, thereby, close from medium to short range; this action enables him to get a better shot. Dur starts to move (run) down the hall by moving out into the open one square. One of the NPC players specifies an interrupt; he wants to take his turn now and shoot at Dur while Dur is in the open. The NPC rolls for the interrupt task and succeeds.

Before the NPC can attack, another player character, Aybee Owen, declares an interrupt of the NPC's turn. Aybee wants to lay down covering fire for Dur by shooting at the NPC who is going to shoot at Dur. Aybee rolls an interrupt task and succeeds. Because all damage from attacks takes effect immediately, if Aybee can put the NPC out of the action before the NPC's turn resumes, the NPC will be unable to do anything to Dur. Neither the players nor the NPCs can interrupt any further (since only one interrupt per side is allowed, per square of movement or per attack). When Dur moves another square, or if he shoots while moving down the hall, another pair of interrupts becomes possible.

Multiple interrupting sides

Combats involving multiple sides can complicate interrupts. Resolve as follows: In a combat when an action provokes an interrupt one person from each "side" may attempt an interrupt, if more than one "side" attempts to interrupt then the one that rolls highest (+DMs), assuming the roll was high enough to succeed as an interrupt is the only one considered to have succeeded to interrupt, and goes before the original actor, all the others are considered to have failed to interrupt and go afterwards in initiative order.

A single interrupt of the highest rolling interrupter is also allowed; this interruption can now include the "side" of the original mover but not the "side" of the highest roller interrupter.

Remember that having already tried to interrupt and failed makes you invalid to try to interrupt again until the original interruption is resolved

Thus for any action that provokes an interrupt it can be seen that there can be one interrupt from a side other than the provoker's and one counter interruption from a side other than the interrupter's

MOVEMENT

When first performing an action in a round a unit must specify one movement speed to be used for the turn. Movement speed 1 is human walking speed; speed 2 is human running speed and higher speed levels apply to some animals and to vehicles. An animal's speed is determined when it is created (see the *Referee's Manual*). A vehicle's speed is determined by dividing its velocity in kilometers per hour by 10.

The Movement Points Table gives the number of movement points a unit receives for each movement speed. Each square into which a unit moves costs one movement point. Thus, to move three squares would cost a unit 3 movement points.

Movement Points Table

Indoor Scale		Outdoor Scale		
6 sec Combat Rounds		1 min Cbt Rds	10 min Cbt Rds	
Speed	1.5 m Scale	15 m Scale	150 m Scale	1500 m Scale
1	6	1	1	1
2	12	2	2	2
3	24	3	3	3
4	40	4	4	4

Movement Die Modifiers

Movement speed is an advantageous modifier in the defense if a unit is a target at short range. For example, a running character (speed 2) receives an advantageous defensive modifier of 2 when being attacked at short range.

For each range band beyond short range, divide the movement DM by 2 (drop fractions). For a running character who is a target at medium range, his movement DM becomes 1 (one-half of his speed of 2). At long range, the character's movement DM drops to zero (one-half of 1); he no longer receives an defensive modifier for running at long range or beyond.

When a moving unit is attacking, he must also apply his movement speed as a disadvantageous modifier. Thus, if a character is attacking while running (speed 2), he must apply a modifier of -2 to his attack. This modifier is unaffected by movement range.

If both the attacker and defender are moving, the modifiers are cumulative. If the attacker is riding in an air/raft moving at speed 4 and he wants to shoot an animal (at short range) moving at speed 3, the total modifier on the to-hit roll is -7.

Matching Vectors

If the vehicle operator matches vectors with a given moving target:

To match vectors with a moving target:

Routine, Vehicle, Movement DM (confrontation).

Referee: The Vehicle skill and movement DM of both the attacker and the defender may be used as DMs to either help or thwart this task, as appropriate.

With ground vehicles, this task is not possible unless the ground vehicle is travelling on smooth, hard ground such as a road. If this roll is successful, If this task is successful, use the difference in speed as movement DM on the "to hit" task

Fire Control

Vehicles with weapon fire control work a little differently. Find the difference in speed between the vehicle and the target and use the result as the defender's movement DM at short range. Divide the movement DM by 2 for each range band beyond short range as usual. For example, if an air/raft with weapon fire control is moving at speed 4 and the target is moving at speed 3, the vehicle only gets a modifier to hit of -1 at short range and no modifier at medium range or beyond.

MOVEMENT DM GUIDE (% OF TARGET SPEED)

Range Bands

C/S	M	L	VL	D	VD
100	50	25	10	5	—

Vehicle mounted weapons with point defense targeting modules suffer no penalty when firing at moving targets

Evade

A unit may state *evade* as a movement qualifier (speed 1 evade, for example) in an attempt to make himself a more difficult target. An evading unit must pay double the normal movement cost to enter a square. A typical square that ordinarily costs 1 movement point to enter costs 2 movement points if the unit is evading in that square.

An evading unit may not use any weapons to parry or block in hand-to-hand combat. Unintelligent animals may not evade.

To compute the defender and attacker's movement DMs, an evading unit applies double its movement speed as a movement DM. For example, a running evading character (speed 2) receives an advantageous defensive modifier +4 when being attacked at short range; a walking evading character must apply a modifier of -2 on his attacks.

Additional Movement Notes

A character may not *run* if he has just been involved in hand-to-hand combat that turn.

Conscious characters or animals may always move a minimum of 1 square per turn. This also applies to vehicles and robots as long as their means of locomotion is still operating.

FIRE COMBAT

A unit may shoot once, using fire combat, at another unit during a combat round. Fire combat may be direct fire (the attacker can see the target) or indirect fire (the attacker fires by the direction of an observer who can see the target).

Only weapons specifically listed as indirect fire weapons may use indirect fire to shoot at a target. Indirect fire weapons which are not crew-served nor vehicle-mounted (such as the grenade launcher) are treated as direct fire weapons if the attacker can see the target. In this case, the attacker uses his skill in the weapon rather than Forward Observer skill as a modifier on the to-hit roll.

Point Defense Fire

Direct Fire weapons equipped with a point defense targeting module can fire at incoming direct fire missiles, grenades, rockets, and indirect fire from mortars, howitzers, high-velocity guns, multiple rocket launchers, and mass drivers. Incoming

rounds must be visible by direct line-of-sight by the point defense system for at least 150 meters of their trajectory in order to be targeted. When engaging direct fire projectiles, the firing point defense system must also have line-of-sight to the vehicle or object targeted by the projectiles.

The range at which a point defense system can engage is limited by the shorter of the weapons range or the range at which a fire controlled weapon can engage with Routine difficulty (V. Long for TL 9-13, Dist. for TL 14+). Apply a +1 modifier to the roll for each tech level above 9 of the firing point defense targeting module (a TL10 module receives a +1, TL11 receives +2, etc.).

A marginal success on the task roll destroys one incoming round; if there is exceptional success (see page 71) each level by which the task roll is exceeded destroys additional incoming rounds. The number of rounds destroyed doubles for each additional level of exceptional success (so a +4 exceptional success will destroy $1+2+4+8+16 = 31$ rounds). The effectiveness of Point Defense fire is halved against multiple rocket launchers, which are designed to saturate point defenses (so, in the preceding example, the 31 rounds result would be halved to 16 when firing against MRL rounds: always round in the defenders favor).

The player firing the point defense weapon decides which incoming rounds are destroyed. Point defense weapons ignore the 'small target' difficulty level increase. Non-grav ground vehicles may not move if they are to perform point defense fire.

Determining Range

Range is determined by tracing the shortest possible path of squares between the firing unit and the target of the attack. Count the number of squares and compare the result to the Range Bands table to determine the range used to resolve the fire.

If a unit is firing at a target at a different altitude, determine the range to the target as the greater of the difference in altitude (in meters, kilometers, or whatever) or the range to the ground square the target is over on the playing surface. For example, if a vehicle is flying over a ground square that is at medium range (5 to 50 meters), but the vehicle's altitude is 200 meters (long range), then the vehicle's range for purposes of combat attacks is long range.

Direct Fire

All units (enemy or friendly) in a firing unit's line of fire are potential targets. The likelihood of hitting a target with direct fire is a task:

To hit a target with direct fire:

(Difficulty), Weapon, Dex, Movement DM, 1 combat round (absolute).

Referee: The difficulty level of this task varies, depending on the type of weapon used and the range to the target. Select the proper difficulty from the Direct Fire Difficulty Profile table. Note that when weapon enhancements are added to a weapon, substitute the Weapon Enhancement difficulty profiles for those in the Direct Fire Difficulty table. Fire Controlled weapons (those that are crew-served or vehicle mounted) use the Fire Controlled Difficulty table.

The following increase the difficulty by one level:

- target under cover but still visible
- small target (basketball size or less). An animal weighing 10kg or less is a small target, as is a robot with a chassis volume of 10 liters or less.

- attempting rapid fire (emptying ammo clip in one round)
- Pinpoint hit – success reduces armor value by half

The following decrease the difficulty by one level:

- large target (ground car size or larger). An animal weighing 500kg or more is a large target, as is a robot with a chassis volume of 500 liters or more.

A character that remains stationary for the combat round and can brace against something may use the gyrostable difficulty profile when firing his weapon.

Direct Fire Difficulty Profiles

Type	Close	Short	Med	Long	V Long	Dist
Handgun	Sim	Rou	Dif	For	Imp	--
Rifle	Rou	Rou	Dif	Dif	For	Imp
Thrown	Rou	Dif	For	Imp	--	--

Thrown weapons include any crude hand-thrown projectiles, such as blades or spears.

Weapon Enhancement Difficulty Profiles

Type	Close	Short	Med	Long	V Long	Dist	V Dist
Scope	--	--	--	Dif	Dif	Imp	--
Gyrostable	--	--	Rou	Dif	For	Imp	--
Scope + Gyro	--	--	Rou	Dif	Dif	For	Imp

Scope may be either optical or electronic sights.

Fire Controlled (crew-served or vehicle mounted)

TL	Close	Short	Med	Long	V Long	Dist	V Dist	Reg	Cont
5	--	Rou	Rou	Dif	Dif	For	Imp	--	--
6	--	Rou	Rou	Dif	Dif	For	Imp	--	--
7	--	Rou	Rou	Rou	Dif	Dif	Imp	--	--
8	--	Rou	Rou	Rou	Rou	Dif	Imp	--	--
9	--	Rou	Rou	Rou	Rou	Dif	For	Imp	--
10	--	Sim	Rou	Rou	Rou	Dif	For	Imp	--
11	--	Sim	Sim	Rou	Rou	Dif	For	Imp	--
12	--	Sim	Sim	Rou	Rou	Dif	For	For	Imp
13	--	Sim	Sim	Rou	Rou	Dif	Dif	For	Imp
14	--	Sim	Sim	Sim	Rou	Rou	Dif	For	Imp
15	--	Sim	Sim	Sim	Rou	Rou	Dif	For	Imp
16	--	Sim	Sim	Sim	Sim	Rou	Dif	For	Imp

Additional Direct Fire Notes

Bows, Crossbows, Bola, Boomerang, and Sling

Instead of using the character's Dexterity as the crucial characteristic on a "to hit" roll, these weapons use the average of the character's Strength and Dexterity (drop fractions).

Under Cover versus Evading

Under cover but visible refers to a non-moving unit, while evading always refers to a moving unit. Thus, a unit cannot be both under cover and evading; he is one or the other.

Line of Fire

Each square passed through by the line of sight before and after passing through the target until the line of sight encounters an obstruction is the line of fire of the weapon.

All enemy targets along the weapon's line of fire and in the same range band as the primary target are attacked by the fire (at full penetration for the range band); others in the line of fire but in different range bands are not. For example, if a gauss rifle fires at a target at long range, all other targets along its line of fire at long range are attacked, while targets along the line of fire but at short or medium range are not.

The enemy target closest to the firing unit and in the line of fire is attacked first, ignoring all friendly units. Then the next closest enemy target is attacked.

However, if exceptional failure occurs when rolling for a hit, then friendly units are included when determining the closest target. In other words, don't get exceptional failure or you may hit some of your own guys who happen to be in the line of fire!

Danger Space

Some weapons, such as a plasma gun, have a danger space of more than one square. Such weapons can cause damage to units near the primary target if those units are in the weapon's danger space. See Group Hits, below.

The danger space for flechette rounds applies only along the line of fire and is not circular like the danger space for all other rounds.

Unless an alternate danger space is specified for a particular weapon, all weapons have a danger space of one square.

Group Hits

All units in a weapon's danger space, but not in the designated primary target square, may also suffer damage.

Roll for a hit on all units in the weapon's danger space. On all targets except the primary target (the one at which the attacker is aiming), use all normal modifiers except any bonuses due to weapon skill or dexterity.

In the target square, compute the weapon's penetration as normal. One square away, the weapon's penetration is halved; two squares away it is halved again and so on. If the penetration is zero, then no damage is suffered.

For example, a vehicle's fusion gun hits a target in a square at long range, with a normal penetration at that range of 14 and a danger space of 10 meters (six 1.5 meter squares). All adjacent units may also suffer damage roll (roll for a hit on each one) but with a penetration rating of 7. Two squares away, those receiving hits are subjected to a penetration rating of 3; three squares away, those receiving hits are subjected to a penetration rating of 1. Beyond that, no hits are suffered since the penetration rating drops to zero.

Automatic Weapon Fire

Certain weapons can be set on full automatic, if desired. Switching between full automatic (fire multiple rounds per pull of the trigger) and semiautomatic (fire one round per trigger pull) is done at the end of a combat turn. The unit may move or evade while changing the setting.

An automatic weapon set on full automatic may hit multiple targets adjacent to the primary target. The weapon tables list the additional adjacent autofire targets (in addition to the primary target) that may be hit by the weapon when it is set on full automatic.

Autofire Weapons with a Danger Space

For weapons that can attack targets adjacent to the primary target through both autofire and the effects of a danger space: conduct all autofire attacks first. Once the autofire attacks are complete, roll for hits on any remaining targets in the danger space using the normal danger space rules, measuring danger space from the primary target. In some cases, the referee will have to randomly select which of the adjacent targets to subject to the autofire and which to leave for the danger space effects.

Danger space, group hits and autofire resolution.

When faced with a potentially confusing combination fire attack, *always* determine a *single primary target* before you begin resolving hits.

Once the single primary target has been identified in a combination attack, it remains the primary target for the entire combination attack. If the firing unit wants a shifting primary target, then he is conducting rapid fire instead.

Once the single primary target has been selected, resolve a combination attack by starting with automatic fire hits. Automatic fire weapons give the firing unit additional “bonus attacks”. Roll a “to hit” task on the primary target as normal, then roll an identical “to hit” task for each adjacent target (player’s choice), up to the number of autofire targets possible. The firing unit has considerable freedom when specifying which adjacent targets—the attacking unit may actually apply *all* of its autofire attacks to the primary target if it wants to, *as long as* no other potential targets exist along the line of fire in the same range band. In any case, each autofire attack requires its own roll.

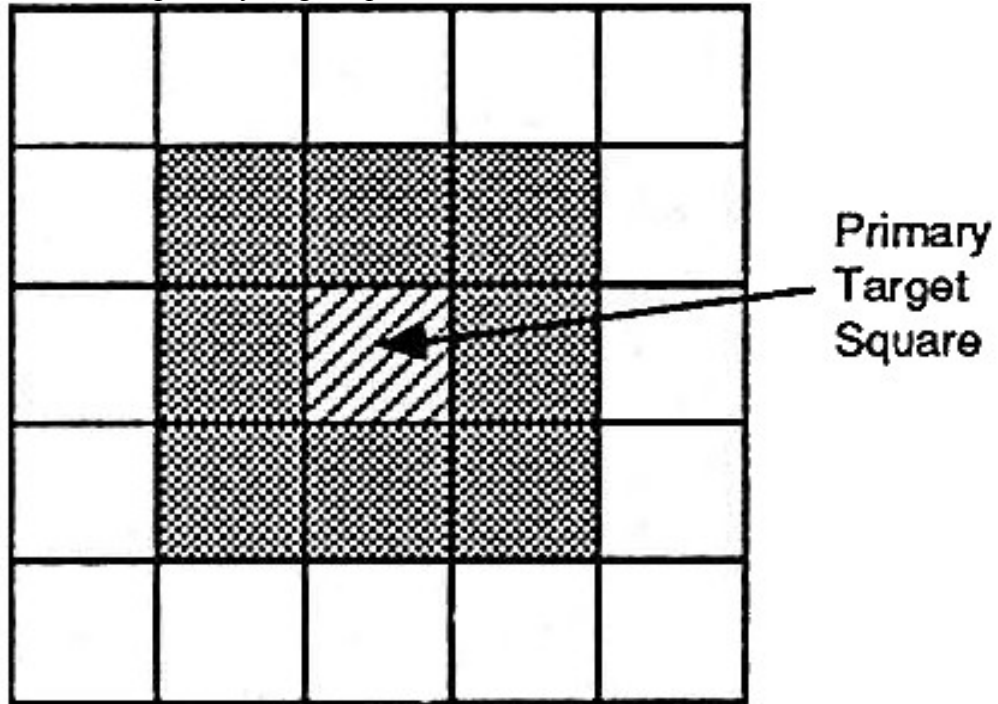
The line of fire rule also comes into play here. A good way to use the line of fire rule with autofire is to make the closest target in the line of fire the *default* primary target, with all other targets in the line of fire becoming adjacent targets. Any leftover autofire attacks (after applying at least one hit roll to each target in the line of fire) can be applied to laterally adjacent targets. In any event, leftover attacks should prefer the primary target for remaining unused attacks.

This leads us to a concept of “preferred target precedence”. A preferred target should take more hits than any other target. The preferred target precedence for autofire is:

1. Primary target;
2. Targets adjacent to the primary target and in the line of fire;
3. Targets adjacent to the primary target and *not* in the line of fire.

Put another way, the primary target (item 1) should never take fewer autofire hits than adjacent targets in the line of fire (item 2), and targets in the line of fire should never take fewer autofire hits than targets not in the line of fire (item 3). If the attacker wishes

to violate this precedence, require exceptional success for each "to hit" roll which violates it. The hit reverts to standard precedence if exceptional success is not achieved. Danger space represents how much the weapon "spatters" or "sprays" when it hits; that is, what collateral damage the weapon does to nearby targets when it hits the primary target. These collateral hits are known as group hits. All units in a weapon's danger space are subject to group hits. Danger space is always expressed in meters. To determine the danger space in squares, divide by the distance scale being used and round 0.5+ fractions up. The result indicates the number of squares (including the primary target square) to which the danger space extends. The danger space extends in all directions from the primary target square.



ARL Danger space of 2 squares at 1.5 meter scale

Rapid Fire

A character may specify that he wishes to conduct "rapid fire" with his weapon. If this is the case, use a modifier to -4 on the "to hit" roll but allow the character to designate three separate primary targets near each other. The targets don't need to be adjacent but they all must fall within the same 45-degree arc. When combined with automatic fire, rapid fire allows a character to thoroughly "spray" an area with fire.

When a character uses rapid fire, he has automatically "emptied his weapon" and must spend the next combat round reloading. A character may move or evade while reloading but may not fire.

The Weapons table indicates which weapons may and may not conduct rapid fire under the recoil column of the weapon tables.

A unit without fire control may never conduct both pinpoint location fire and rapid fire at the same time.

Recoil

Certain weapons with more recoil than normal are marked as high-recoil weapons on the Weapons table. Such weapons require that the attacking character be stationary and well braced in order to fire. Consequently, high recoil weapons may only be fired if the attacking character does not move at all during the combat round.

Pinpoint Location

If desired, a unit can specify that he is going for a pinpoint location on a target in an effort to hit a more vulnerable location. Treat a pinpoint location shot the same as hitting a small target: increase the difficulty by one level.

A unit without fire control may never conduct both a pinpoint location attack and rapid fire at the same time. If a hit is scored divide armor value of target by two.

Coup de Grace

Most weapons may be used to administer a coup de grace shot to an unconscious or non-struggling unit (typically a character, animal or robot) at close range if the unit with the weapon so states. The "to hit" roll automatically succeeds.

Indirect Fire

Personal combat covers indirect fire weapons that are located on the field of battle. For rules on calling in long-distance artillery strikes (such as fire from orbiting starships), see the *Special Rules* section.

The only indirect fire that can be conducted indoors is hand throwing grenades. All other indirect fire is exclusively an outdoor combat activity.

Outdoor indirect fire arrives on the next combat round following its request. Indirect fire must use the following roll to see where it hits:

To hit a targeted location with indirect fire:

Difficult, Forward Obs, 1 combat round (absolute, unskilled OK, fateful).

Referee: Indirect fire requires the assistance of a character that can see the target.

This condition is accomplished using the Forward Observer skill of this particular character. The firing unit does not need to see the target to use indirect fire.

Indirect fire called in by an independent observer begins arriving in the combat round immediately following the request.

If this task fails, the indirect fire automatically scatters, roll for a mishap. Forward Observer skill may be used as a special minus DM on the Mishap table. When fire scatters, it hits in a randomly adjacent area (square, hex).

Hand-throwing a grenade at a target is a special situation, and has its own special task:

To hit a target square with a hand-thrown grenade:

[difficulty], Str, Dex, absolute: 1 combat round (fateful).

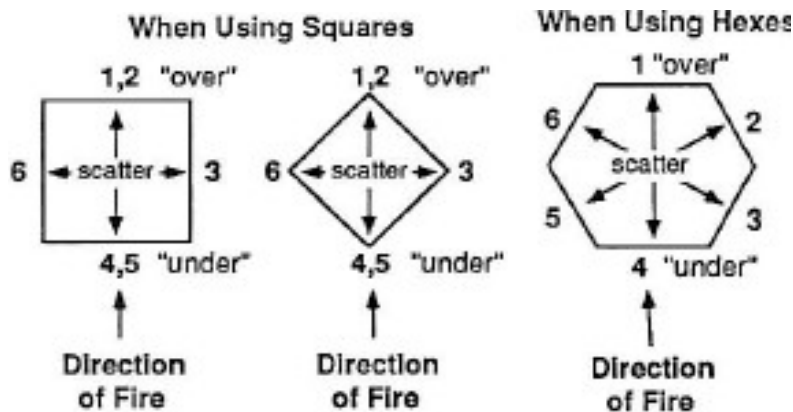
Referee: Use the direct fire thrown difficulty profile when hand-throwing a grenade at a square. If the task fails, the grenade fails to hit its intended square, so it scatters.

Contrary to normal indirect fire, a hand-thrown grenade can scatter back into the thrower's square.

If the grenade hits an obstruction (such as a wall, closed portal, or fence), it stops and scatters no further.

The final location of the grenade is where it explodes: it explodes at the end of the thrower's turn.

Scatter: If indirect fire fails to hit its intended target, it scatters randomly. To determine direction of scatter, roll 1D and consult the following diagram:



The distance of the scatter depends on the mishap level—with Forward Observer skill (or Strength plus Dexterity in the case of hand-thrown grenades) usable as a special minus DM on the mishap table in this case:

Superficial: 1D% of the distance from the attacker to target (minimum 1 square).

Minor: 2D% of the distance from attacker to target (minimum 2 squares).

Major: 3D% of the distance from attacker to target (minimum 3 squares).

Note: Indirect fire (exception: hand-thrown grenades) can never scatter into the firing weapon's square. If it does, roll for a different scatter direction.

HAND-TO-HAND COMBAT

A unit at close range may (but does not have to) attack using hand-to-hand combat. If the unit conducted a fire attack in the current combat round, it may defend against hand-to-hand attacks but it may not initiate them.

To hit another unit with a hand-to-hand attack:

Routine, Off=Wpn skill, Str; Def=Wpn skill

Referee: If the attacker is unskilled, increase the difficulty of this task by one level; if the defender is unskilled, decrease the difficulty of this task by one level.

The defender may use his weapon (whatever weapon he currently has) for defense. Note that the defender may later conduct a hand-to-hand attack with his weapon if he has not yet taken his turn.

To defend against a hand-to-hand attack:

Routine, Off=Wpn skill, Dex;

Referee: If the attacker is unskilled, increase the difficulty of this task by one level; if the defender is unskilled, decrease the difficulty of this task by one level. If successful consult the table below.

Defense Roll	DM to attack
A natural 2 or -4	+2
-2	+1
failure	0
success	- Wpn Def
+2	- (Wpn Def +1)
+4	- (Wpn Def +2)

The defender may attempt to preempt the attack by interrupting the attacker (note: use Dexterity in place of movement speed as the DM when interrupting a hand-to-hand attack in this manner). The defender may not attempt to interrupt anyone other than the attacker.

Failure means the defender blocked or otherwise avoided the attack.

If either the attacker or defender uses a weapon not specifically designed as a hand-to-hand weapon, use the following guideline to classify it. If the weapon is blunt (like the butt of a rifle) treat it as a club; if the weapon is sharp (like a broken bottle), treat it as a dagger.

Disarm Opponent

If desired, when a successful hit is scored, a "disarm opponent" result may be selected instead of applying damage. If so, the disarmed unit may not attack using that weapon for the rest of the round. Any weapon, including natural weapons (such as hands), may be disarmed (in the case of natural weapons, the disarm result is actually a "stun").

With weapons that can be knocked out of the enemy's grasp, if a disarm result roll effect is higher than the Strength bonus of their opponent the enemy unit must determine scatter on the weapon to see where it lands (see Indirect Fire) the distance being 1m per every 2 effect over the required value. Either unit may retrieve the weapon by moving to the square with the weapon and spending the rest of his turn picking up the weapon.

A disarmed unit can always move or attack with other weapons in his possession; he just cannot attack using the disarmed weapon.

A unit undergoing a hand-to-hand attack can try to interrupt the attacker; in this case, use the interrupting unit's Dexterity as the DM in place of movement speed. In effect, two units locked in hand-to-hand combat may interrupt each other, but no other units.

Units not engaged in the hand-to-hand attack may interrupt with a fire attack or they may interrupt the hand-to-hand attack in order to move adjacent to a unit (same or different unit) and conduct a hand-to-hand attack themselves. No more than one interrupt per side

is allowed at any given time. A unit firing into a hand-to-hand combat risks hitting someone other than their intended target. This occurs if they roll 2 less than their required roll, although the GM can alter that likelihood if they declare in advance.

A unit who specifies he is conducting a hand-to-hand attack cannot perform any further actions; he must end his turn with the hand-to-hand attack.

PENETRATION AND DAMAGE

Once a target character has been hit, it is necessary to determine what, if any, damage was sustained.

Determining the Penetration Rating for a Given Range

Each weapon's penetration rating includes a penetration and an attenuation.

The listed penetration is for short range. The attenuation indicates how many range bands to count (starting with short range) *before* the penetration drops by half. The weapon's penetration continues to drop by half every so many range bands until either the weapon's maximum range is reached or the penetration reaches zero.

For example, if a weapon with a penetration rating of 4/3 (read as "four per three") has a penetration of 4 at short range, then the penetration drops by one-half unit for every 3 range bands. Thus, the weapon has a penetration of 4 at short, medium and long range; the weapon also has a penetration of 2 at very long, distant and very distant range; and a penetration of 0 at far orbit, extreme orbit, and interplanetary range.

However, a weapon's maximum range limits how far it may fire, even if the penetration has not dropped to zero. Referring to the above example, if the weapon's maximum range is distant it may not fire at any targets beyond distant range.

PENETRATION/ATTENUATION GUIDE (%)

Range Bands

SY												
RG	XO						SS					
Att	C/	M	L	VL	D	VD	CN	PL	FO	IP	ST	IS
en	S											
/1	10	50	25	10	0	0	0	0	0	0	0	0
0												
/2	10	10	50	50	25	25	10	0	0	0	0	0
0	0	0										
/3	10	10	10	50	50	50	25	25	10	10	0	0
0	0	0	0									
/4	10	10	10	10	50	50	50	25	25	25	10	10
0	0	0	0	0								
/5	10	10	10	10	10	50	50	50	50	25	25	10
0	0	0	0	0	0							
/6	10	10	10	10	10	10	50	50	50	50	25	25
0	0	0	0	0	0	0						

Determining Damage

To determine the actual damage suffered by a target, compare the weapon's penetration at that range to the target's armor.

$$\text{damage inflicted} = (\text{weapon damage}) \times (\text{armor modifier}) \times (\text{to-hit roll modifier})$$

If the weapon's penetration is at least twice the armor value, the weapon inflicts its full damage point value. This is known as a *high penetration* result.

If the weapons' penetration is at least equal to the armor value, the weapon inflicts 50 percent of its damage point value. This condition is referred to as a *low penetration* result.

If penetration is less than the armor value, the weapon inflicts 10% of its damage point value if the target is a character with exposed areas of less than the full armor value. On the other hand, if the character is fully enclosed in the armor, the hit has no effect. Vehicles and robots always apply such hits as structure damage. This is known as a *zero penetration* result.

Damage Effects: Armor

Type	Condition	Damage Modifier
High Penetration	Wpn penetration \geq armor value	none
Low Penetration	Wpn penetration \geq (armor value x 0.5)	x 0.5
Zero Penetration	Wpn penetration \geq (armor value x 0.1)	x 0.1 (enclosed: x 0)

Marginal Success

If the to-hit roll (including modifiers) is exactly equal to the roll that is needed for success, marginal success (a *graze*) has occurred. Apply 50% of the normal damage point value (dropping fractions). Thus, if a weapon would inflict 50 percent damage at this range, marginal success would only cause 25 percent damage. For example, if a weapon inflicts 3 damage points when it penetrates cloth armor at this range, on a marginal success it would only do 1 point of damage.

Exceptional Success

If the to-hit roll (including modifiers) exceeds the roll needed for success by:

2-3	apply damage points x 2 (a minimum of 1)
4-7	apply damage points x 4 (a minimum of 2)
8+	apply damage points x 8 (a minimum of 4)

If a weapon normally causes 3 points of damage at this range when it penetrates cloth armor, an exceptional success of 2 or 3 would cause the weapon to inflict 6 points of damage.

Because of the minimums, it is possible for a weapon that ordinarily has zero penetration to inflict damage points upon achieving exceptional success.

In all combat computations, drop fractions. A penetration of 3 reduced in half becomes 1. A damage of 0.3 becomes 0

An easy way to remember marginal and exceptional successes' effects on damage is: exact roll, halve it; 2+, double it once; 4+, double it twice; 8+, double it three times.

Damage Effects: To-Hit Roll

Condition	Damage Modifier
roll \geq required roll + 8	x 8 (minimum 4)
roll \geq required roll + 4	x 4 (minimum 2)
roll \geq required roll + 2	x 2 (minimum 1)
roll \geq required roll + 1	x 1
roll = required roll	x 0.5

Cover

While cover makes it more difficult for an individual to hit a target, it generally makes a hit more serious because lightly armored areas of the target are exposed. Thus, if a hit is obtained on a target under cover and the target has exposed areas (areas with little or not armor), treat the target as only having one-half of its regular armor value when computing penetration.

Unconsciousness

An unconscious character or animal may not perform any activity throughout the rest of the combat session.

Damage to robots

A simple system to create hit values for humanoid sized robots similar to PC hits

Inoperative: Volume/35

Destroyed: Volume/15

Low penetration hits damage hull also, other hits also roll on the vehicle hit table

Damage to Vehicles and Robots

Damage to vehicles or robots can occur in the super-structure, power plant or locomotion. Also, individual crewmembers (in vehicles), mounted weapons or various other devices can be hit and destroyed in combat.

For purposes of personal combat only, multiply a vehicle's hit value by 10 before starting the combat session. For example, a ground car lists hull hits of 2/5. Its actual hit value in personal combat is 20/50 (multiplied by 10). In a similar manner, its locomotion and power plant hits are each 10/20 (1/2 multiplied by 10)

Hit Location

Hit	Subtable 1	Subtable2	Subtable3
1 Superstructure	1 Power Plant	1 Device	1 Locomotion
2 Crew	2 Power Plant	2 Device	2 Locomotion
3 Crew	3 Power Plant	3 Device	3 Locomotion
4 Subtable 1	4 Power Plant	4 Device	4 Locomotion
5 Subtable 2	5 Power Plant	5 Weapon	5 Turret
6 Subtable 3	6 Computer	6 Weapon	6 Turret

Superstructure: apply the damage only to the superstructure

Crew: apply the damage to the superstructure and then (for vehicles) apply one-half of the damage points to randomly selected personnel inside

Power Plant: apply the damage to the superstructure and apply the damage points to the power plant inside. If the power plant is not fusion, also roll the tech level or less on 3D to avoid a catastrophic explosion that will destroy the vehicle or robot. Once the damage has reached one-half the power plant's inoperative level, a power loss occurs: any energy weapons may no longer be fired and the vehicle or robot's top speed drops in half.

- Computer: apply the damage to the superstructure. Also, on a vehicle, the computer is destroyed; on a robot, its brain is destroyed. If a robot's brain is hit, it ceases to function.
- Device: apply damage to the superstructure, then destroy some important device or sensor
- Weapon: apply damage to the superstructure, then destroy some mounted weapon. If the vehicle or robot mounts a non-energy weapon, the individual should also roll the tech level or less on 3D to avoid a catastrophic magazine explosion which will destroy the vehicle or robot.
- Locomotion: apply damage to the superstructure, then apply the damage points to the locomotion as well. Once the damage has reached a level that is equal to one-half of the locomotion inoperative level, the vehicle or robot's top speed drops in half.
- Turret: apply damage to the superstructure, then destroy a weapon turret (or destroy an appendage if a robot).

All explosive rounds which penetrate a vehicle's hull also cause crew hits to all crew members in the danger space of the explosion (at half the penetration value of the explosive round)

Reaching the Inoperative Level

A vehicle or robot that has reached the inoperative level on structural hits may not perform any activity for the rest of the combat session. If the inoperative level has been reached on the power plant hits, the vehicle may not move and may not use any weapons or installed devices requiring power plant energy. Flying vehicles automatically crash: roll 3D on the Mishap table.

If the locomotion inoperative level has been reached, the vehicle may not move. Flying vehicles that lose their locomotion must roll the following task:

To avoid a crash landing when locomotion becomes inoperative:

Difficult, Vehicle, Dexterity (fateful).

Referee: Roll this task when the air vehicle hits the ground.

In the turn following the loss of locomotion, an air vehicle continues to move forward at one-half of its current movement rate and drops at the rate of 10 m/s.

PERSONAL ARMOR

Values for the most common types of personal character armor are listed on the Personal Armor Table. With the exception of reflec armor, no character may wear any armor along with another type of armor. If a character wears reflec with another type of armor, use the best armor factor for the defender when making the computation for the armor penetration.

Personal Armor Table	
Type	Value
Jack	(1)
Mesh	2
Flak Jacket	3
Cloth	5
Ablat	1 [6]
Reflec	[10]
Vacc Suit-8	4
Vacc Suit-12	5
Vacc Suit-14	6
Body Pressure Suit	1
Hostile Environment Vacc Suit-8	5

Hostile Environment Vacc Suit-9	6
Hostile Environment Vacc Suit-12	7
Hostile Environment Vacc Suit-13	8
Hostile Environment Vacc Suit-14	9
Combat Environment Suit-6	6
Combat Armor-11	8
Combat Armor-12	10
Combat Armor-14	18
Battle Dress-13	10
Battle Dress-14	18

Notes: Values in parentheses only apply in hand-to-hand combat. Values in brackets only apply against laser fire.

CHARACTER IMPROVEMENT

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Even after a character has mustered out of prior service, he or she can still increase skills and characteristics in the course of many **Traveller** scenarios. Quite naturally, these increases are not automatic or easy and players should remember that acquiring one or two skill levels during character generation usually takes the equivalent of four years of game time. Players must be patient to succeed.

There are three basic means of improving a character: *experience*, *formal training* and *self training*. Experience requires successful observation beforehand (preferably) followed by successfully performing some task that makes use of the desired new skill. Formal and self training requires determination, plus the appropriate learning materials: books, computer terminals, tools and equipment, formal training requires a teacher and perhaps some institution.

EXPERIENCE

Experience comes from participation; a passive character accumulates less knowledge. Positive results come when a character is successful but one can learn from mistakes too.

New Skills by Tasks

Gaining experience depends on tasks and is determined by successful and unsuccessful tasks. A character may specifically state that he is trying to gain some particular new skill, then he may attempt an *observation* task for rudimentary knowledge related to the task he later attempts.

To observe a particular procedure in order to learn it:
Difficult, Determination.

Referee: This task is attempted only by a character unskilled in the skill being observed. If the character succeeds, he receives a temporary skill level-0 for use in the next task attempt with this skill (and then loses the skill level-0). The time duration for this observation task varies and should be set by the referee. The observation task itself may be hazardous if the procedure is hazardous.

Players note the skills their characters have observed.

The observation task comes into play in the case in which a character wants to earn ATs (defined below) for a particular skill and so attempts to involve himself as much as possible in that skill. When someone wants to learn to repair an automobile engine, he spends more time tinkering with his own engine, hangs out at garages and watches others perform repairs. In game terms, this means that characters will tag along with each other as much as they can. When one character goes to haggle with some merchants, another will accompany him so he can learn Trader or Broker skill. Another character, flying an air/raft or piloting a starship, will be pestered by his friend who wants to try it. These situations may entail further danger and in any case should add spice to adventures, if only because they further the opportunities for character interaction.

Trial and Error

When the character attempts a task that would normally require a skill that he does not have, he gradually (if lucky and persistent) learns something about it. At the end of each adventure session, the referee should reward each character with one adventure tally (AT) for a particular skill that played a significant part in the session. The AT may be in a new skill or a skill that the character already has but an AT for a new skill can be given only if the character succeeded in a task that would normally require that new skill (this is why successful observation is so important). Players should keep track of their ATs. ATs can accumulate over time and are not lost except as described below.

For example, repairs to a malfunctioning air/raft normally require the skill of Gravitics. A character without Gravitics who succeeds in the repair task would be awarded an AT for Gravitics at the end of the game session (if the task was unsuccessful, the Gravitics AT would not be awarded). A character might have attempted several different tasks but he receives an AT for only one skill per session, decided upon by the referee. It is possible that a character will receive no AT for a session.

A character can gain an AT for each skill every 90 days.

ATs should be recorded to show both the skill and the date. For example, AT-Gravitics (001-1117) or AT-Gravitics (270-1117).

GAINING THE SKILL

When a player thinks that his character has sufficiently practiced a new skill (shown by the accumulation of ATs for it) he may attempt to gain that skill. Accumulated ATs may also be used to increase an existing skill level.

To obtain (or improve) a skill by experience alone:

Formidable, AT, Int (safe).

Referee: This task can be attempted once at the start of each adventure session and cannot be repeated until the next session if the attempt fails. Accumulated ATs are a DM for this task; the character must have at least one AT for the skill to attempt this task.

If the character already has the pertinent skill, success increases the skill one level. If the character does not have the skill, success gives him that skill at level-0. Failing this task does not affect ATs; they continue to accumulate as usual. Succeeding in this task reduces the number of ATs for the skill to 0; the character must start anew to raise the skill another level. The absolute maximum DM for the task is +8.

ATs and Characteristics

Characteristics can be improved with ATs. Once he accumulates ATs, if a player makes a successful task roll his characteristic value increases by one.

ATs are harder to accumulate for characteristics because it is harder for the character to apply himself to this more general type of activity. To accumulate ATs for a characteristic, the player must declare (at the beginning of the session) that he is working

for an AT in that particular characteristic. If the character has a good opportunity to apply this characteristic, the referee can award him one AT in that characteristic.

Other Advantages to ATs

Increasing skills and characteristics by accumulating ATs encourages characters' participation, keeps their interest at a high level and makes them aware of the benefits they can achieve during any session.

FORMAL TRAINING

Characters can gain skills through formal training, which includes anything that is thought by a teacher or institution. Formal training produces documentation that a skill has been learned. This fact is usually unimportant but can make a difference. A character with medical skill learned during combat might not qualify as a "genuine" doctor and a character who learned to fly an air/raft by bringing in smuggled goods might not qualify for a driver's license, even though highly skilled.

Tasks for Formal Training

Successfully gaining training requires successfully completing three separate tasks:

Task 1 - Finding the Appropriate Formal Training

A character needs to find a training environment. The materials depend on the type of training, subject matter and duration. The player must determine the facilities and setting and convey that to the referee, who must deal with the search for those facilities.

To find formal training in a particular subject:

<Difficulty>, Applicable skill. <time taken>

Referee: This task should be adjusted for each course of formal training.

Time taken is in hours on high pop world, 2 hours on a moderate world and 4 hours on a low population world.

Difficulty is routine on a moderate population world, simple on a high population world and difficult on a low population world.

Making this task more difficult are rare skills (a dead language), underworld skills (bribery or forgery), wrong tech code (trying to Gravitics on a pre-industrial world), wrong law code (trying to learn to use automatic weapons where they are restricted), prestigious schools (where not everyone can meet the high standards for admission), special materials needed for study (such as cadavers for medical training) or inappropriate world physical characteristics (a vacuum world for jet pilot training).

The opposite conditions would tend to make this task simpler. The referee must balance the circumstances and decide upon the final task difficulty for each case.

Some skills might be used as modifiers for this task, depending on the type of formal training desired. Computer skill might make it easier to find computer-aided instruction software for a particular skill. Streetwise skill could help a character find someone willing to teach a component of the Vice cascade skill. Admin could help a character cut through the red tape in applying for school admission. A character using Persuasion could convince a tutor to take on a new student. Interview could help determine a potential tutor's real level of expertise in a subject.

The time duration for this task also varies considerably, depending on circumstances. At the upper limit, some university courses might require a character to apply up to a year before the course starts. Finding just the right person to teach a skill could easily take a year.

If a tutor is used, he must be qualified both in the desired skill and as an instructor. He can teach the character the desired skill up to one less than his level in that skill or his Instruction skill, whichever is lower. For example, a shipmate with Instruction-2 and Navigation-3 could teach some else up to a level of Navigation-1. Alternatively, if the shipmate had Instruction-3 and Navigation-2, the student could still learn only Navigation-1 from that instructor.

Ideally, the referee will create a small scenario for the player to adventure in while finding the people and equipment he needs for this task. The referee can see to it that not only is the character serious about learning, but that the player also has a good time on the way to a higher level of skill.

In some circumstances, this task could be hazardous, fateful or non-repeatable.

Task 2 - Staying Determined during Training

Staying determined once training has begun is harder for some than for others. Many characters make plans but fail to follow through on them, just as people in real life sometimes run out of steam before they finish a project. One thing necessary for successful formal training is consistency, and characters must be willing to apply themselves for the entire duration of the training to get the benefit. A character that gives up on a course half way through will get little from his good intentions.

Determination is calculated as the sum of the bonus from both INT and END

To stay determined during a course of study:

Routine, Determination, 20 hours

Referee: This task varies, depending upon the type of formal training undertaken.

A typical course of study should average 200 hours in length; this might consist of 40 hours per week in a five-week intensive course; two hours of lecture per week over a period of two years; a university class that meets three hours per week with outside work of seven hours per week over a period of twenty weeks; or self-study or computer-aided instruction of one hour per weekday for 40 weeks.

If the character fails, the time duration roll determines how long the character spent before losing interest in the training. In the worst case, the character could spend the entire amount of time (or even extra study time) but never really apply himself during that period and so not be eligible for the next roll, as described below.

Optionally the study can be broken into blocks of 20-40 hours and a separate determination check made for each block, the time period of the block only counts towards the required time (3d6 * 20) if the roll was successful. There is usually a time limit (say max time * 1.5) by which a character has to finish a formal course before they are assumed to have failed.

Task 3 - Completed Formal Training

If a character finds formal training and applies himself to the full course of study, he may gain or increase his level of expertise in a skill. Occasionally, however, an unfortunate character will not master the material despite having done the work.

To complete formal training and gain a skill:

Difficult, Related skill, Instruction.

Referee: A character who has found training and has stayed determined is eligible to find out if he successfully adds to his repertoire of skills from the training.

Related skill is the skill being studied; a character trying to learn Robotics-4 could use his Robotics-3 skill as a DM. Pilot-3 (which can be used as ship's boat-2) can be used in an attempt to learn Ship's Boat-3. The referee may determine that other skills may also be applicable: a character studying Gravitics could benefit from prior knowledge of Physics and a character training in Interrogation could benefit from the levels he has earned in Interview. The referee must decide on a case by case basis which skills can be used. Only one, however, can be used; a character with computer-3 and electronics-2 could not use both skills to modify a roll to learn robotics.

The Instruction skill for this task is that of the *teacher* rather than that of the student. A character studying legal from someone with instruction-2 has a DM of +2 for this roll.

If the character already had some level of the pertinent skill, success in this task will give him an increase of 1 level in that skill, to a maximum skill level of 4. If the character did not have the skill to any degree, success will give him that skill at level 0.

Costs for Formal Training

On the average, formal training costs approximately Cr5 *(level desired +1) per hour. This figure must be adjusted by the referee based on the specific circumstances for each case.

Training for Characteristic Improvement

Characters can choose to undertake formal training to increase the values of their physical and mental characteristics to a maximum of 15 in each characteristic. The procedure is identical to that used above but the value of the characteristic is used for the DM for the completion task. A characteristic cannot increase by more than +1 for each game year.

For example, a character could regularly lift weights to improve his strength; he could study fencing to improve his dexterity or he could run regularly to improve his endurance.

SELF TRAINING

Characters can gain skills through Self-training, which includes anything that is just *watching* and *doing*: self-study, study at home, reading, or computer instruction.

Tasks for Self Training

Successfully gaining training requires successfully completing three separate tasks:

Task 1 - Finding the Appropriate Self Training Material

A character needs to find a training course. The materials depend on the type of training, subject matter and duration.

To find a Self training course in a particular subject:

<Difficulty>, Applicable skill. <time taken>

Referee: This task should be adjusted for each course of Self-training.

Difficulty is routine on a moderate population world, simple on a high population world and difficult on a low population world.

Time taken is in hours on high pop world, 2 hours on a moderate world and 4 hours on a low population world.

Making this task more difficult are rare skills, underworld skills, wrong tech code, wrong law code, special materials needed for study or inappropriate world physical.

The opposite conditions would tend to make this task simpler. The referee must balance the circumstances and decide upon the final task difficulty for each case.

Some skills might be used as modifiers for this task, depending on the type of Self-training desired. Computer skill on a suitably high tech. World (tl 8+) might make it easier to find computer-aided instruction software for a particular skill.

The quality of self-training instruction varies with the roll made to find the course

Roll	Instruction equivalent DM
Required	-1
Required +2	0
Required +4	+1
Required +6	+2

Task 2 - Staying Determined during Training

Staying determined during self-training is harder than formal instruction. Many characters make plans but fail to follow through on them, just as people in real life sometimes run out of steam before they finish a project. One thing necessary for successful self-training is consistency, and characters must be willing to apply themselves for the training to get the benefit. A character that gives up on a course half way through will get little from his good intentions.

Total time for self-study course 3D6 x 30 hours

As it is difficult for a student to know how long self-training takes, roll each 30h time dice separately only when the character has achieved the time required by the previous roll.

To stay determined during a course of self-study:

Difficult, Determination EDU

Roll determination every 10 hours study; only count those hours that the character succeeded towards completing the course.

Task 3 - Completed Self Training

If a character finds self-training and applies himself to the full course of study, he may attempt to gain or increase his level of expertise in a skill, this is harder for self training than formal training

To complete Self training and gain a skill:

Difficult, Related skill or Stat, Instruction equivalent DM.

Referee: If successful one level of skill is gained, otherwise 2 Ats are gained

Related skill is the skill being studied; a character trying to learn Robotics-4 could use his Robotics-3 skill as a DM. Pilot-3 (which can be used as ship's boat-2) can be used in an attempt to learn Ship's Boat-3. The referee may determine that other skills may also be applicable: a character studying Gravitics could benefit from prior knowledge of Physics and a character training in Interrogation could benefit from the levels he has earned in Interview. The referee must decide on a case by case basis which skills can be used. Only one, however, can be used; a character with computer-3 and electronics-2 could not use both skills to modify a roll to learn robotics.

If the character already had some level of the pertinent skill, success in this task will give him an increase of 1 level in that skill, to a maximum skill level of 4. If the character did not have the skill to any degree, success will give him that skill at level 0.

Costs for Self Training

Self-training costs 500 cr * (level desired +1) * by a level 1-5 representing the material requirements.

This figure must be adjusted by the referee based on the specific circumstances for each case.

Training for Characteristic Improvement

Characters can choose to undertake Self-training to increase the values of their physical and mental characteristics to a maximum of 15 in each characteristic. The procedure is identical to that used above but the value of the characteristic is used for the DM for the completion task. A characteristic cannot increase by more than +1 for each game year.

For example, a character could regularly lift weights to improve his strength; he could study fencing to improve his dexterity or he could run regularly to improve his endurance.

Changes to Social Standing

Social Standing is an exception to these rules; it cannot be increased by formal training or experience and requires significant cash expenditures and consequent changes in lifestyle to "become" part of the desired social class.

If a character wishes to maintain a new higher level of spending in an attempt to permanently raise his social standing, he must spend as much as his desired social standing would require for the course of a year. At the end of the year, the character's social standing increases by one. However, this technique cannot be used to gain noble status.

Maximum number of skills

The sum of all a character's skill levels cannot exceed the sum of their EDU and INT. If they gain skill levels that would break that limit they need to lose points from other skills until they reach that level. The number of permanent level 0 skills that a character can have cannot exceed the greater of half either their INT or EDU (round up) each level 0 skill they have beyond that counts as a level 1 skill when determining the maximum number of skills.

Free Time Available

A character cannot spend all their hours studying.

Characters performing a job as well as studying have less time available than those studying full time.

Characters studying full time have 8 hours/day

Characters working, such as starship crew have to find time to study/work out

To find time to study while crewing a starship

Routine <skill related to job>

On success the character has 3 hours per day available

On exceptional success the character has 4 hours per day available

On failure the character only has 2 hours per day

The GM can adjust those figures depending on the characters workload