

# Blast Radius

Version 2

C Grade Games

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## Character Features and Levelling

### S.P.E.C.I.A.L

How S.P.E.C.I.A.L are YOU? What makes YOU S.P.E.C.I.A.L? S.P.E.C.I.A.L is your character's attributes, your base stats. These determine everything you do, from combat to social situations to random blind luck and chance. While you will rarely roll WITH a S.P.E.C.I.A.L attribute, they affect certain skills largely. Starting with one mandatory point in each S.P.E.C.I.A.L attribute, you can distribute a remaining 28 amongst the 7 of the following attributes; each attributes permanent (or natural) level caps at level 10:

Strength Perception Endurance Charisma Intelligence Agility Luck

**Strength** determines your recoil management for non-energy weapons, specifically affecting your ability to shoot fast with semi-automatic weapons, and consistency with automatic weapons. It factors into melee weapon damage and determines unarmed damage. It also can give a small edge in social situations due to your size. It primarily affects skills: Guns, Melee Weapons, Unarmed, and Speech.

**Perception** determines your ability to handle explosives safely and allows for more accurate long-range shooting as improves eye-sight. It helps with situations that require an insightful approach, such as lockpicking and sneaking. Higher level perception also benefits identifying many things how an item is broken and where non-visible entities are if they are making sound. It primarily affects skills: Energy Weapons, Explosives, Guns, Lockpick, and Sneak.

**Endurance** determines the effectiveness of your worn armour, with preference to heavy and medium armours. It allows you to stay in underwater and radiative areas for longer, and allows for you to take more injuries before going down in combat. It affects carry weight, and primarily affects the Survival skill.

**Charisma** determines social situations allowing for better prices and convincing diplomacy, including intimidation. It primarily affects skills: Barter and Speech.

**Intelligence** determines your precision when shooting specific limbs without the V.A.T.S targeting system, and benefits practical resource usage, such as repairing items, making explosives, and making or gathering consumable resources. It primarily affects skills: Energy Weapons, Explosives, Guns, Medicine, Repair, Science, and Survival.

**Agility** determines the effectiveness of your worn armour, with preference to light armour and being unarmoured. It also determines the ability to be good on your feet, even affecting sneaking. It affects Action Points, and primarily affects the Sneak skill.

**Luck** determines every action you do that requires percentile rolling and has a success threshold, see rolling dice for more information.

## Experience

Experience (abbreviated XP) is gained from killing entities, succeeding non-combat skill rolls, and completing quests. All XP gained is split evenly amongst the people who participated in the XP gaining action, including NPC party members. I.e., while quest XP gain is party wide, combat XP is only given to those who participate in the combat, and non-combat skill rolls are only given to the party member who succeeded. XP gain for quests is specific to the quest listed on its page, XP gain for killing entities is defined as the killed entities level times 3, and XP gain for non-combat skills is listed on their specific sections. Once a player reaches the XP cap for their level,  $100(\text{Character Level})^2$  then they may level up, being able to increase skills and possibly choose a perk. The player characters' XP is then reset to 0, with gained XP over the XP cap rolling over to the next level.

## Skill Levels

The level your skills start at is determined by S.P.E.C.I.A.L., as listed below:

Barter =  $2 + (1.8 \times \text{Charisma}) + (0.2 \times \text{Strength}) + (0.5 \times \text{Luck})$   
Energy Weapons =  $2 + (\text{Perception}) + (\text{Intelligence}) + (0.5 \times \text{Luck})$   
Explosives =  $2 + (1.2 \times \text{Perception}) + (0.8 \times \text{Intelligence}) + (0.5 \times \text{Luck})$   
Guns =  $2 + (1.2 \times \text{Perception}) + (0.4 \times \text{Strength}) + (0.4 \times \text{Intelligence}) + (0.5 \times \text{Luck})$   
Lockpick =  $2 + (2 \times \text{Perception}) + (0.5 \times \text{Luck})$   
Medicine =  $2 + (2 \times \text{Intelligence}) + (0.5 \times \text{Luck})$   
Melee Weapons =  $2 + (2 \times \text{Strength}) + (0.5 \times \text{Luck})$   
Repair =  $2 + (2 \times \text{Intelligence}) + (0.5 \times \text{Luck})$   
Science =  $2 + (2 \times \text{Intelligence}) + (0.5 \times \text{Luck})$   
Sneak =  $2 + (\text{Perception}) + (\text{Agility}) + (0.5 \times \text{Luck})$   
Speech =  $2 + (1.5 \times \text{Charisma}) + (0.5 \times \text{Strength}) + (0.5 \times \text{Luck})$   
Survival =  $2 + (\text{Endurance}) + (\text{Intelligence}) + (0.5 \times \text{Luck})$   
Unarmed =  $2 + (\text{Strength}) + (\text{Agility}) + (0.5 \times \text{Luck})$

Three of these skill you may also denote as "tag" skills. A tag skill gets +15 permanent level. Skills do not increase with these equations after character creation, and are instead increased by 14 each time the player character levels up.

## Traits and Perks

Upon character creation, each player may pick up to 2 traits, which are gained passive abilities with a downside. All traits are displayed here. Similarly, one perk can be chosen every even level (2, 4, 6, 8, etc...), and are earn-able traits which rarely have a downside. All perks are displayed here.

## Action Points

Most exerting things you do require action points (AP); the number of AP you have is:

$$AP = 10 + (2 \times \text{Agility}) \quad (\text{AP})$$

In combat at the start of each of your turns,  $\frac{1}{5}(\text{Agility} + \text{Endurance})$  AP regenerates on you. This regeneration can be increased by spending a major action or two minor actions (in one turn) resting to regenerate  $\frac{1}{10}(\text{Agility} + \text{Endurance})$  AP. If both your Agility Level and Endurance Level are 10, then one minor action can be spent resting restoring 1AP.

## Carry Weight

Carry weight is how much your character can carry. The maximum carry weight is defined:

$$\text{Maximum Carry Weight} = 10 \times (\text{Strength} + \text{Endurance}) \quad (\text{Max CW})$$

## Poison Resistance

Upon being afflicted with a poison, you have a  $[5(\text{Endurance} - 1)]\%$  chance to instead not be afflicted by the poison, resisting it.

## Seeing Distance

The distance your character can see with the naked eye is:

$$\text{Seeing Distance (in feet)} = 100 \times \text{Perception} \quad (\text{SD})$$

Any scoped Pistols, SMGs, Rifles, or Projectile weapons increase the Seeing Distance of the entity looking through it and or using the weapon by the Scope magnification times.

## Wounds

The number of wounds you can take before going down is:

$$\text{Wounds} = 1 + \frac{1}{4}(\text{Endurance} + \text{Strength}) \quad (\text{Max Wounds})$$

## Non-combat

### Barter

Barter is used to get better prices on items. Items are sold to players at their given value, but are bought from players at  $(\text{Barter} \times \text{Item Value})/100$  instead, capping at their given value. Barter can also be used to negotiate prices, with the success rate of negotiating a price above the asking price being:

$$\text{Success Chance} = \left[ \frac{\text{Barter} \times \text{Item Value}}{5 \times \text{Amount Offered}} \right] \% \quad (\text{Negotiation})$$

Where Amount Offered is the price the player wants to negotiate to. After a negotiation is done you can do another, but this is at disadvantage for each negotiation done. This can be done for individual items, or a large sale. Depending on whether you are giving or taking money from the merchant, on a critical failure (95+) the merchant will decrease or increase money exchanged by 10%, or 25% on an 100 instead, and on a critical success (5-) the merchant will increase or decrease money exchanged by 10%, or 25% on an 1 instead.

The negotiating player gets 1XP per cap gained (when selling) or saved (when buying). I.e., they gain  $|\text{Amount Offered} - \text{Item Value}|$  XP.

### Lockpick

Using Bobby Pins locks can be unlocked, this takes the same time as a major action. Locks can also be re-locked with no rolls or tools. Bobby Pins have 10 durability. There are different types of locks:

- Very Easy: Requires 1 Bobby Pin durability to attempt. Failed attempts decrease Bobby Pin durability by 1. The lockpicking player gains 20 XP if successfully picked.
- Easy: Requires 2 Bobby Pin durability to attempt. Failed attempts decrease Bobby Pin durability by 2. The lockpicking player gains 30 XP if successfully picked.
- Average: Requires 3 Bobby Pin durability to attempt. Failed attempts decrease Bobby Pin durability by 1. The lockpicking player gains 40 XP if successfully picked.
- Hard: Requires 4 Bobby Pin durability to attempt. Failed attempts decrease Bobby Pin durability by 1. The lockpicking player gains 50 XP if successfully picked.
- Very Hard: Requires 5 Bobby Pin durability to attempt. Failed attempts decrease Bobby Pin durability by 5. The lockpicking player gains 60 XP if successfully picked.

Success rate is determined by the following:

$$\text{Success Chance} = \left[ \frac{\text{Lockpick}}{\text{Bobby Pin Durability Required}} \right] \% \quad (\text{Picking Locks})$$

If a Bobby Pin's durability reaches zero it cannot be used again and is broken.

## Medicine

Medicine increases the effectiveness of consumed chems, poisons, and venoms. Their magnitude is as given below:

$$\text{Effect Magnitude} = \frac{1}{50}(\text{Medicine} \times \text{Base Magnitude}) \quad (\text{Medicine Effect})$$

If chems, poisons, and venoms are given to another entity, the medicine level used is the one of the administer. Medicine also allows for the creation of some select chem, poison, and venoms with a Medicine roll. Failure to create the item results in the ingredients being destroyed. The process of making chems, poisons, and venoms gives XP per item crafted to the crafter; 10 XP for a failed roll and 40 XP for a successful roll.

## Repair

Repair allows the out-of-combat repair of weapons. One method to do this is the breakdown of an item to repair a duplicate of the same item (or its unique variant). Each time a repair is done through this method the repairing player gets 5 XP, and the amount the repaired item's durability rises because of this is determined by:

$$\text{Repair Amount} = \frac{1}{100}(\text{Repair} \times \text{Scrapped Item Durability}) \quad (\text{Repair Amount})$$

Another way to repair weapons are weapon repair kits. Consuming two scrap metal per attempt a player may roll a repair roll, raising the items durability by the same number as 10 times your repair level. This consumes the scrap metal on failure and success, giving the repairing player 10XP for a failed rolls and 40 XP for a successful roll.

Items cannot be repaired over 100, unless the player is 100 repair level which means items repaired by them can be raised to 1.5X durability.

## Science

Science allows the hacking of terminals, this takes the same time as a major action. Terminals can also be re-locked with no rolls. Hacking has success threshold:

$$\text{Success Chance} = \left[ \frac{20 \times \text{Science}}{\text{Terminal Difficulty}} \right] \% \quad (\text{Hacking})$$

Very Easy (15 difficulty) gives 20 XP on success, Easy (25 difficulty) gives 30 XP on success, Average (50 difficulty) gives 40 XP on success, Hard (75 difficulty) gives 50 XP on success, and Very Hard (100 difficulty) gives 60 XP on success.

After 4 failed attempts of hacking you are locked out of the terminal permanently.

## Sneak

Sneak allows evasion of detection and sneak attacks. In partial cover for each person in your line of sight, roll a roll of threshold:

$$\text{Success Chance} = \frac{10 \times \text{Sneak}}{\text{NPC Perception}} \quad (\text{PC Sneak})$$

Coming out of that cover into being Uncovered requires another roll but at half of the above success rate. Both partial and uncovered success rates are doubled if the NPC is facing away. Being uncovered allows you to instead of being restricted to just the partial cover, be able to move around between covers and get better positioning, or even get closer for a melee strike. Sneaking within 10 feet of an entity causes you to have to make another roll for each person within 10 feet:

$$\text{Success Chance} = \frac{\text{Sneak}}{\text{NPC Perception}} \quad (\text{Close Sneak})$$

This success rate is doubled if the NPC is wearing an ear-covering helmet or cannot hear. If you are detected by hostile NPCs, combat will start. If you are detected by non-hostile NPCs, you cannot re-roll sneak rolls while the NPC is still within your line of sight or within 10 feet, depending on which you failed on. You may also pickpocket not-worn-armour items from an inventory, for a sneak roll per item. On a success you have the item and on a failure you gain a bounty. All sneak rolls mentioned give 20 XP on success for the entities(s) who rolled them.

## Speech

During dialogue if you are high enough level in a specific non-speech skill, the GM may tell you information you can use in the conversation for your benefit. To convince the NPC of this information, this is a standard speech roll. You may also persuade NPCs without prompt with talking points you yourself think of for a standard speech roll if the points are coherent, reasonable, and do-able for the NPC. Note that speech success rates factor karma. On a success they may be persuaded and if they are persuaded you gain 40 XP, on a failure they are not and you gain nothing.

## Survival

Medicine increases the effectiveness of consumed food and drinks. Their magnitude is as given below:

$$\text{Effect Magnitude} = \frac{1}{50}(\text{Survival} \times \text{Base Magnitude}) \quad (\text{Survival Effect})$$

Survival also allows for the creation of some select food and drinks with a Survival roll. Failure to create the item results in the ingredients being destroyed. The process of making food and drinks gives XP per item crafted to the crafter; 10 XP for a failed roll and 40 XP for a successful roll.



## Basic Mechanics

### Rolling Dice

This system relies on percentile dice to roll. If you have an N% chance of success then rolling an N or below on a d100 will succeed and above an N will fail. Luck plays a large part in all percentile rolling that has success thresholds unless otherwise specified;  $\pm 10\%$  of a part to be exact. The following equation is how luck level affects rolls of this category:

$$\text{Roll Threshold} = \text{Success Threshold} + 2(\text{Luck Level}) - 10 \quad (\text{Luck})$$

Where Roll Threshold is the new threshold or percent chance of the roll succeeding and Success Threshold is the percent chance of success without luck such as your level in a skill. As an example, if I was shooting an energy weapon at a target, with 54 Energy Weapon skill level, and a Luck Level of 4, then my new threshold would be  $54 + 2 \times 4 - 10 = 52$ , giving me a 52 percent chance of success instead of the 54. This translates to a success on or below a 52 roll, or a failure above a 52 roll on a d100 percentile dice.

Rolling ranges can also be tough to calculate on the spot; here is a basic equation for this, where M is the maximum and m is the minimum:

$$m \text{ to } M = d(M - m + 1) + m - 1 \quad (\text{Range roll})$$

Finally, note that rolls at half level mean the percent chance of success is halved, and disadvantage or advantage means you roll two and take the lowest or highest respectively. If you have double or more disadvantage or advantage you roll three or more dice instead. Disadvantage and advantage cancel each-other out, if you have a disadvantage AND advantage on a roll, it is just a normal d100 instead of rolling two or more.

### Time and Travelling

Time in the wasteland passes 1:1 with the real world. As well as that, travelling 3000 feet (roughly 1 kilometre) takes 10 minutes. You may travel to any known location using this method, possibly being interrupted by encounters. 3000 feet radius areas can also be searched for an item or location if its location is not known, taking one hour.

## Resting

Resting takes 1 hour minimum, giving the following benefits:

- Makes 1 chosen limb un-injured per hour rested, and if all limbs are not injured, it decreases times hit in each limb by 2 per hour rested
- Fully regenerates sustain on un-injured limbs
- Can repair weapons
- Can reload used magazines and re-order magazines
- Can swap body armour
- Can change weapon attachments

Resting cannot be done near aggressive NPCs. When inside in a bed players are allowed to sleep in, or in a fully cleared out indoors wilderness instance, resting comes at no downside. When outdoors in the wilderness per hour rested there is a  $[(25 \times \text{Hours Rested}) / 6]\%$  chance for the rest to be interrupted by a GM discretion scaled number of random creatures.

## Crime

In major faction settlements and new vegas, different crimes will get different punishments:

- Stealing: Item confiscation and item(s) stolen caps worth fine or guard combat to death
- Assault: 100 caps fine or guard combat to death
- Murder: 1000 caps fine or guard combat to death

Bounty accrued is additive, and can be paid off with equivalent worth items. If you have nothing to pay the bounty, guards will kick you out of the city by force, banned for a week.

In independent towns and vaults stealing will lead to item confiscation and being banned from the settlement for a week, assault will lead to being banned from the settlement for a week, and murder will lead to combat to the death by its residents.

## Karma

Starting at 0 karma, each player individually has a karma level that increases upon doing good deeds and decreases upon doing bad deeds. All party members present gain a karma change on a good or bad deed. Karma can also be changed at GM discretion. Karma affects how all NPCs treat you in social situations, depending on an NPCs alignment. The following are levels of karma:

- 750+ karma: Very good
- 250 to 749 karma: Good
- -249 to 249 karma: Neutral
- -749 to -250 karma: Evil
- -750- karma: Very evil

With neutral karma there is no effect, with positive and negative interactions using the following percentage:

$$[(|Karma| - 250)/10]\% \quad (\text{PN Karma})$$

With negative karma, there is the above percentage chance that persuasion attempts will instead fail. With positive karma, there is the above percentage chance that the NPC will instead say a player persuasion dialogue that the players do not have the requirements for.

Though there are specific events that cause karma changes, the following is a quick reference for general good or bad actions:

- Killing a very evil NPC: +100 karma
- Killing feral ghouls: +5 karma
- Killing fiends or powder gangsters: +5 karma
- Hacking a non-evil NPC owned terminal: -1 karma per attempt
- Stealing from non-evil NPCs: -5 karma
- Killing non-evil NPCs: -25 karma
- Killing a very good NPC: -100 karma

## Locational Hazards

### Radiation

Some areas have residue radiation and cause harm to unprepared players. When entering or exiting an irradiated area, covering the same distance as your move range in an irradiated area, or performing a minor action in an irradiated area, you take a second of radiation damage specific to that area. When performing a major action in an irradiated area you take 2 seconds of radiation damage.

The maximum amount of radiation damage (or rads) you can take is until your strength, endurance, and agility reach zero. Per 50 rads gained, 1 is taken off of strength, agility, and endurance. Once they are all 0 they cannot be lowered further but this comes with many downsides, such as an inability to carry weapons, take even one shot of damage, and move beyond 5 feet per turn.

Rads can be negated with RadAway, the chem that decreases rads. You also can use items such as Rad-X to give radiation resistance. Radiation resistance for M points decreases rads taken by M, for example, if you had 50 radiation resistance then after taking 70 rads you'd instead take 20. Other things such as perks can also give a rad multiplier (M), which changes the magnitude effects of rads on strength, endurance, and agility  $\times (1/M)$ . For example with a rad multiplier of 1.5X instead of the base 1X, it will instead decrease strength, endurance, and agility by 1 each 75 rads. This increases the maximum number of rads you are able to take.

### Darkness

Darkness (or dark areas) are extremely dark places where visibility is reduced to less than 10 feet. Within 10 feet everything is normal, but outside of 10 feet you can only hear. This disallows seeing surroundings and all rolls are at disadvantage when targeting things outside of 10 feet, except  $(2 \times \text{Perception})$  is added to your success rate.

Darkness can be negated completely with your pip-boy light, but will cause sneaking to auto-fail.

### Water

The amount you may move underwater is the same as half your move range, with the number of seconds you can hold your breath being  $(10 \times \text{Endurance})$ .

## Combat

### Equipment

Each humanoid entity has 4 equipment slots of currently equipped items: weapon, body, face, and head. While body armour comes as a full package covering torso, both legs, and both arms, head gear is used give you stats with a hat and or glasses, or a helmet giving extra protection but taking up both the head and face slots. Helmet armour type does not factor into what armour type you are wearing, copying your body armour's armour type and not losing your unarmoured status if you are unarmoured. You must be wearing power armour to be able to wear a power armour helmet. Power armour helmets Body armour cannot be swapped in combat, while any head items can be swapped with a major action. Giving allies any items uses one major action. For a list of equipment and their necessary stats, click [here](#).

### Armour and Sustain

Single instances of one hit may injure limbs if the damage it does is on or more than that limbs Armour Rating (AR); the following is the general equation for AR:

$$AR = \text{Modifier} \times (DT + \text{Level}) \quad (\text{AR})$$

For **unarmoured**, Modifier = 1 and Level =  $(0.25 \times \text{Endurance}) + (0.75 \times \text{Agility})$ . Being unarmoured is wearing only clothing on your body or your body being naked. When unarmoured, moving between cover types does not cost AP, and gives a  $-(\text{Perception} + \text{Agility})$  to your roll result when rolling for turn order. In combat, for  $(10 - \text{Agility})$  AP and no actions, you can increase your move range to 1.5X this turn only. Sneak rolls are at advantage.

For **light armour**, Modifier = 1 and Level =  $0.5(\text{Agility} + \text{Endurance})$ . When wearing light armour, moving between cover types does not cost AP. Sneak rolls are at advantage.

For **medium armour**, Modifier = 2 and Level =  $(0.25 \times \text{Agility}) + (0.75 \times \text{Endurance})$ .

For **heavy armour**, Modifier = 3 and Level = Endurance. Your movement is reduced to half when wearing heavy armour. Sneak rolls are at disadvantage.

Repeated attacks of smaller damage can also injure limbs; if a single limb is hit *Sustain* times, it will become injured:

$$\text{Sustain} = \frac{\text{Modifier}}{25} (DT \times \text{Endurance}) + \frac{\text{Agility}}{\text{Modifier}} \quad (\text{Sustain})$$

**Power Armour** allows the wearer to not expend any AP when handling weapons only expending AP when using V.A.T.S, allows use of any strength requirement weapon, allows the wearing of power armour helmets, and gives immunity to rads.

## **Durability**

All equipment durability, which may be repaired with repair skill if this drops below 1000. Weapons have 1000 durability, and lose 10 durability on firing (or hitting if a melee weapons), with some ammunition causing a larger or smaller durability loss. Armour and clothing have a durability unique to each item and lose durability equal to the damage they take. If an entities torso, left arm, right arm, left leg, or right leg, is hit their body armour will degrade, while if an entities head, is hit their helmet or head item will degrade. If they have no head item or their head item is at zero condition their face (or another non-slot dependent head-worn item) will degrade, degrading nothing if nothing is worn on the head.

Below half durability, items will become damaged, and weapons start to deal less damage and armours start to lose damage threshold. This decreases linearly with the items durability percentage remaining, tending to half effectiveness at 0 durability. If an item actually reaches 0 durability, then it is not de-equipped but it becomes broken, and cannot be used to attack if a weapon, or it's effects cannot be used including damage threshold if a worn item. Items of 0 durability cannot be utilised again until repaired to above 0 durability.

Durability does not affect weapon modifications and the effectiveness of bobby pins.

## **Sneak Attacks and Combat Hiding**

Sneak attacks are pre-combat attacks that start combat that deal 2X damage, with melee weapons instead dealing 4X. Multiple people can sneak attack at the same time. When sneak attacking, each participating person gets one major action and must roll to hit normally. Explosions will alert people within 200 feet, un-silenced guns will alert people within 200 feet, other loud weapons will alert people within 100 feet, and silenced guns and quiet weapons do not alert other people. Sneak attacks that injure the head twice over kill the target. If the target does not die or is not downed during the sneak attack, they can bring attention to themselves within a 100 foot radius, alerting others if not already alerted. If no-one is alerted combat does not start.

Players may also go into combat being undetected by enemies, allowing for a delayed sneak attack on their turn. Hidden players in combat will not be attacked by enemies while hidden unless they are given away by their cover state changing forcefully or not, and failing appropriate sneak rolls.

During combat a player can hide again to make another sneak attack. This does not take them out of combat. To do this, the player must roll the Close Sneak equation for each NPC while fully covered. This takes a turn (1 major and 2 minor actions). On a failure they are seen but on a success they may sneak attack once again, rolling appropriate sneak rolls for movement and cover states.

## Turn Structure and Move Range

Upon each players turn, at base they can make 1 Major Action and 2 Minor Action. You can use a major action as a minor action, but not the other way around. They can be used in any order, and the minor actions must be used on your turn, while the major action can be used to hold an action for an event to happen, like for an enemy to come out of cover.

Players also get a certain amount of movement per turn, being able to cover (per turn):

$$\text{Distance (in feet)} = 5 \times (\text{Agility} + 1) \quad (\text{Move range})$$

Each turn takes 6 seconds (major action = 3s, minor action = 1.5s) meaning as all turns are happening at the same time so do all combat rounds. If anything changes the amount of actions one can make in a turn, it does not change their turn time, only changes the time taken for each action.

## Turn Order

Upon starting combat, everyone rolls a d100 dice and negates their perception level from it. The lower results go before the higher results. NPCs roll as one, and do not take their perception level into account. You may use action points to lower your roll result by 2 before the first person takes their turn.

## Cover and Action Holding

Cover is any surroundings you can reasonably hide behind in combat, and is your best friend. There are 3 status' of cover:

- **Fully Covered:** You are behind cover, are fully concealed, and cannot be shot from angles that reasonably cannot see you. This is for when you are fully behind an object.
- **Partially Covered:** You are partially behind cover, are partially concealed, and can be shot from angles that reasonably can see you. Here, some of your limbs are behind cover; if any attacks incoming from entities that see you as in partial cover, hits to these body parts will automatically miss instead. This is for when you are behind a smaller object, one with gaps, or when you are shooting around cover.
- **Uncovered:** You are not behind cover, are not concealed, and can be shot from angles that reasonably can see you.

While you might be in one cover state to one entity, another entity may see you as a different cover state due to different angles, so make sure to position right as to not be caught uncovered by a flanking enemy!

When fully covered, all entities the other side of your cover also become fully covered to you only; so you cannot directly shoot them. You can use throw explosives or other things behind a fully covered targets cover, and also talk to them, if either are reasonable to do so. When fully covered you can move to other fully covered areas or uncovered areas freely, or partially covered areas for 1AP and a minor action.

When partially covered and uncovered all entities you can reasonably see are targetable, as you are now either looking around your cover (partially covered) or not behind cover (un-covered). When partially covered you can move to other partially covered areas or uncovered areas freely, or fully covered areas for 1AP and a minor action. When uncovered you can freely move to all accessible areas.

On your turn you can hold an action for when an event happens using a major action. For example, you can use this in situations when you think an entity is behind cover; you can hold an action until they come out, and you will shoot them when they do. Entities with a held action for one event will do that action simultaneously (make the actions in turn order for ease), and then after these actions are made the entity who's turn it is continues their turn after.



## Energy Weapons, Guns, Thrown Weapons, and Projectile Explosives

These can be used when you have line of sight with an enemy. To see if you do, see cover. Upon hitting an enemy you hit a random body part, equal chance between each one. There are two different states of firing:

- **Blind Attack:** When fully covered, blindly attack over your cover. This is a low risk low reward attack. You cannot use V.A.T.S during this. The chance to hit is:

$$\text{Success Chance} = \left[ \frac{\text{Skill Level} \times \text{Perception}}{5 \times \text{Distance (in feet)}} \right] \% \quad (\text{Blind attack})$$

- **Aimed Fire:** Aim properly at a target when uncovered or partially covered, this is a high risk high reward attack. Percent chance to hit is your skill level (including luck), and you can use V.A.T.S. Different body parts can be aimed for, where the body part you're aiming for instead has a  $(0.5 \times \text{Intelligence}) \times$  chance to be hit. Note that this multiplier affects un-aimed fire hit chances, multiplies before any rounding, and is always 1 at a minimum no matter how low your intelligence.

The following is different mechanics for different ranged weaponry:

- **Revolver Pistol (Gun):** Can shoot 3 times per major action (0AP), but can also shoot once on minor actions (1AP). Can reload 4 bullets in one major action, and 1 bullet on a minor action. Has a range of 200 feet or 100 feet if your perception level is 1. Costs no actions to swap to (0AP).
- **Semi-Automatic Pistol (Gun):** Can shoot 3 times per major action (0AP). Can reload a full magazine in one major action. Has a range of 200 feet or 100 feet if your perception level is 1. Costs no actions to swap to (0AP).
- **Semi-Automatic Rifle (Gun):** Can shoot once per major action (0AP), or twice (2AP). Can reload a full magazine in one major action. Has a range of 750 feet or Seeing Distance feet, whichever is lowest. Costs a minor action to swap to (1AP).
- **Lever-Action Rifle (Gun):** Can shoot and cock in either order once per major action (0AP), or do both twice (3AP). Can also shoot once on minor actions (1AP), but does not cock the weapon. It costs a minor action to cock manually (0AP). Can reload 4 bullets in one major action, and 1 bullet on a minor action. Has a range of 750 feet or Seeing Distance feet, whichever is lowest. Costs a minor action to swap to (1AP).
- **Bolt-Action Rifle (Gun):** Can shoot once per major action (0AP). Can reload a full magazine in one major action. Requires a minor action to chamber a round after firing (1AP). Has a range of Seeing Distance feet. Costs a minor action to swap to (1AP).
- **Automatic Rifle (Gun):** Can shoot  $(\text{Strength})/2$  times in one major action (1AP per bullet fired). Can reload a full magazine in one major action. Has a range of 750 feet or Seeing Distance feet, whichever is lowest, capping at 600 when firing two bullets, 500 when firing three bullets, 350 when firing four bullets, and 200 when firing five or more bullets. Costs a minor action to swap to (1AP).

- **SMG (Gun):** Can shoot Strength times in one major action (1AP per bullet fired). Can reload a full magazine in one major action. Has a range of 150 feet or 100 feet if your perception level is 1. Costs a minor action to swap to (1AP) or no actions to swap to (3AP).
- **Lever-Action and Pump-Action Shotgun (Gun):** Can shoot and cock in either order once per major action (0AP). Can also shoot once on minor actions (1AP), but does not cock the weapon. It costs a minor action to cock manually (0AP). Can reload 4 bullets in one major action, and 1 bullet on a minor action. Has a range 100 feet, dealing half damage at above 40 feet, and a quarter damage at above 75 feet. Costs a minor action to swap to (1AP).
- **Double-Barrelled and Riot Shotgun (Gun):** Can shoot twice per major action (0AP). Can reload two bullets in one major action, or one per minor action. Has a range 100 feet, dealing half damage at above 40 feet, and a quarter damage at above 75 feet. Costs a minor action to swap to (1AP).
- **Heavy Weapons (Gun):** Can shoot 20 times in one major action (1AP per two bullets fired). Reloads a full magazine in two major actions and 4 minor actions. Has a range of 200 feet or 100 feet if your perception level is 1. Costs a major action to swap to (3AP).
- **Energy Pistol (Energy Weapon):** Can shoot 4 times per major action, 3 times beyond 75 feet, 2 times beyond 200 feet, and 1 time beyond 400 feet (0AP). If not a laser type weapon, the number of times it can shoot per action is decreased by one, with a range limit of 400 feet. Can reload a cell in one major action. Has a range of Seeing Distance feet. Costs no actions to swap to (0AP).
- **Energy Rifle (Energy Weapon):** Can shoot 2 times per major action, or 3 times (2AP) if within 300 feet. Beyond 600 feet this weapon can only shoot once per major action. If not a laser type weapon, the number of times it can shoot per action is decreased by 1, with a range limit of 600 feet. Can reload a cell in one major action. Has a range of Seeing Distance feet. Costs one minor action to swap to (1AP).
- **Energy Heavy Weapons (Energy Weapon):** Can shoot 20 times in one major action (1AP per three bullets fired). Reloads a full charge pack in two major actions and 4 minor actions. Has a range of Seeing Distance feet, but success rates are instead  $[(40 \times \text{Energy Weapons} \times \text{Perception}) / (\text{Target Distance})]\%$  or their normal rate, whichever is lower. Their range instead decreases to 20 foot range if a shorter range weapon such as an Incinerator. Costs a major action to swap to (3AP).
- **Thrown Melee Weapons (Melee Weapon)** Thrown Melee Weapons can be used once in a major action (0AP), or twice (1AP). They can also be used in minor actions (1AP). Has a range of Seeing Distance feet or  $20 \times \text{Strength}$  feet, whichever is lower. Costs no actions to swap to (0AP).

- **Thrown Explosives (Explosive)** Thrown Explosives can be used once in a major action (2AP). Has a range of Seeing Distance feet or  $20 \times \text{Strength}$  feet, whichever is lower. Costs no actions to swap to (0AP). Deals damage to the hit body part and a random body part on all entities within 20 feet.
- **Projectile Explosives (Explosive)** Projectile Explosives can be used once in a major action (2AP). If magazine fed, can reload a full magazine in one major action. If not magazine fed, can reload one round in one major action. Has a range of 200 feet or 100 feet if your perception level is 1. Costs a major action to swap to (1AP). Deals damage to the hit body part and a random body part on all entities within 20 feet. Note that the grenade machinegun counts uses Explosive rolls, ranges, and damage, but shares its firing rate mechanics with Gun Heavy Weapons.

Using the right weapon for the range is important, there are three states of range:

- **Indoors:** When indoors, shooting is normal, except Rifles' and Heavy Weapons' fire rate is halved, as the turn is partially spend manoeuvring the longer and larger weapon through the tighter space.
- **Outdoors, within Seeing Distance:** Shooting is normal.
- **Outdoors, beyond Seeing Distance:** Defined above is how far each weapons range is, which is the minimum between your seeing distance and how far a weapon can physically reach, or its physical maximum range; this may change with the number of shots you take in an action. Some weapons are only limited by their seeing distance, and are called weapons of high range. If a weapons range is limited by your seeing distance, you can attack past this range but not past the weapons physical maximum range, with long-range or beyond seeing distance attacking. This has reduced success rates than that of attacking within seeing distance:

$$\text{Success Chance} = \left[ \text{Skill Level} \times \frac{\text{Seeing Distance}}{\text{Target Distance}} \right] \% \quad (\text{Long-range shooting})$$

All missed attacks done involving projectiles, be that bullets, lasers, or thrown items, land (Rolled Value - Success Threshold) feet away from their target. Critical Failures (95+) will attack a random target (including allies) and a random body part. Critical successes (10-) will allow you to shoot again for (0AP), and on a 1 this extra attack deals 2X damage.

## Energy Weapon, Gun, and Thrown Melee Weapon Damage

For Energy Weapons, Guns, and Thrown Melee Weapons:

$$\text{Minimum Damage} = \frac{\text{Damage}}{1 + \text{Spread}} \quad (\text{EWGTMW m})$$

Meaning on each landed hit on a target, it does (Minimum Damage) to (Damage) points of damage, or a  $d[\text{Damage} - \text{Minimum Damage} + 1] + \text{Minimum Damage} - 1$ . You can get different types of ammunition that have different effects; all ammunition and their effects is listed here.

## Close-range Melee Weapons and Unarmed

Bladed, Blunt, and Unarmed Melee weapons all have a common range of 10 feet. With melee weapons and unarmed, you can choose which body part to hit. Unarmed punches deal Strength damage plus any Unarmed weapons currently equipped. All unarmed and melee weapons take no actions to swap to but cost half their strength requirement in AP. The following are melee weapon and unarmed weapon categories:

- **Small weapons:** Can hit 2 times in one major action (0AP), or twice more (1AP per swing), and can also attack once on minor actions (2AP). Small weapons include weapons of a strength requirement 4 or below.
- **Medium weapons:** Can hit once in a major action (0AP), but can hit a maximum of twice more (2AP per swing). Medium weapons include weapons of a strength requirement 5-6.
- **Large weapons:** Can hit once in a major action (2AP), but can hit once more (2AP). Large weapons include weapons of a strength requirement 7 or above.

Both Close-range Melee weapons and Unarmed attacks deal their damage without minimums, which means if a weapon says it does 50 damage on hit, it does 50 damage on hit, each successful hit.

On a critical failure (95+) you hit yourself on a random body part and your turn ends. On a critical success (10-) a minor action is taken off the targets turn; if they have no minor actions they lose a major action; if they have no major or minor actions you can take your turn again. On a 1, it has the same effects of a critical success except you also get an extra hit (0AP) at 2X damage.

## Vault-Tec Assisted Targeting System

Vault-Tec Assisted Targeting System, or V.A.T.S, is a targeting system you can use for any weapon (excluding placed explosives), that will target for you! V.A.T.S is more taxing on your body, but only factors in the target's distance from you. You can target anything; so long as it exists in the world, you can line-of-sight see it, and it is within the weapons range (excluding seeing distance limitations), it gives a percent chance to hit of:

$$\text{Success Chance} = \left[ \text{Inf} \left( \text{Sup} \left( 5, \frac{100}{1 + e^{0.005(D-150)}} - 4, \frac{100}{1 + e^{0.04(D-84)}} \right), 95 \right) \right] \% \quad (\text{V.A.T.S})$$

where  $D$  is the distance your target is from you. Do not worry, this is calculated for you as are most equations, computed for you on your character sheet, but the next part is important to remember. V.A.T.S also makes everything cost 2X AP, but does not roll with luck, makes critical failures impossible (including a rolled 100), increases critical successes thresholds by 5, and a rolled 2 instead counts as a rolled 1.

## **Magazines and Loading Weapons**

Rounds can be chambered manually into guns and projectile explosives for one minor action for guns or one major action for projectile explosives, allowing for the ability to shoot a desired round without interrupting your magazine or round order. When manually loading single rounds into a gun or projectile explosive, they will interrupt already loaded rounds and the one you loaded last will be shot first. You can do this with one minor action per round loaded or twice in a major action for guns, or once in a major action for projectile explosives, if not already described.

When you put a magazine into a gun or projectile explosive, you choose what order and what rounds go into the magazine when you reload. This order cannot be changed unless you manually chamber a round or fully reload the magazine, the latter of which returns the un-shot rounds to your inventory and loads the new magazine.

Energy weapons can have ammunition reloaded, but the unfinished cell will return to your inventory as an unfinished cell; make sure to mark down how much of it has been used.

Revolvers can switch their currently chambered round for no cost.

## **Weapon Modifications**

Weapon Modifications go on specific weapons to enhance their fighting capabilities, either replacing (replacer) or attaching onto (attachment) a pre-existing weapon part. Owned weapon mods can be put on weapons during rests. With a weapon repair kit, you may consume 1 duct tape, 1 scrap metal, and 1 wonderglue to attach any scope to any weapon. All weapon modifications are displayed here.

## Placed Explosives

To set as active and place, placed explosives require a successful d100 roll with a threshold of (Explosives + Perception), on a success they are set and on a failure they are a dud and will not work ever; this roll can be made by the GM, and the fact that the explosive is a dud or is active does not have to be told. Placed explosives cannot be thrown, and are used to set as traps under your own feet. If a remote detonation you can explode it at any time. If timed it explodes after the timer runs out. For trapped explosives, if anyone steps on or immediately around this placed explosive, you roll d[Explosive] and they roll d[5(Perception + Agility)]. If they are higher it does not detonate, but if you are higher it does detonate and deals its damage to both of the target's legs and the surroundings for 20 feet, damaging a random limb on in-range entities. Explosives can be defused with an explosive level roll at half level.

On a critical failure (95+) the explosive immediately detonates after placing, dealing 2X damage on an 100 roll. On a critical success (10-) it deals 2X damage after detonating.

## Explosive Damage

For **Projectile Explosive** weapons:

$$\text{Minimum Damage} = \frac{\text{Damage}}{1 + \text{Spread}} \quad (\text{PE m})$$

Meaning on each landed projectile explosive on a target, it does (Minimum Damage) to (Damage) points of damage, or a  $d[\text{Damage} - \text{Minimum Damage} + 1] + \text{Minimum Damage} - 1$ ; thrown and placed explosives do not use this first formula. Where Distance is the entities distance from the explosion's impact zone, **all explosives** then use the second formula:

$$\text{Minimum Explosion Damage} = \frac{\text{Explosion Damage}}{(3 \times \text{Distance}) + 1} \quad (\text{Expl m})$$

Explosions do (Minimum Explosion Damage) to (Explosion Damage) points of damage, or a  $d[\text{Explosion Damage} - \text{Minimum Explosion Damage} + 1] + \text{Minimum Explosion Damage} - 1$ . Note that Distance may be different for each affected entity. You can get different types of ammunition that have different effects; all ammunition and their effects is listed here.

Note that as previously mentioned, all missed attacks done involving projectiles land (Rolled Value - Success Threshold) feet away from their target, meaning even if an explosive misses its target it may still affect them.

## **Damaging Limbs and being Downed**

An entities limb (head, torso, left arm, right arm, left leg, or right leg) is injured if they are hit more than Sustain times on the same limb, or if the limb is hit for more than that limbs AR at any point. Injured limbs cannot have sustain increased or decreased. If one entity has Wounds number of injured limbs or more they are now down and cannot fight.

Downed cannot make actions except move at a fifth of their Move range each turn, except if all of their arms and legs are injured; they cannot move in this case. A downed entity can still be targeted and have extra limbs injured while downed. Downed entities can also have Stimpaks used on them to bring them back from being down, by healing injured limbs.

## **Post-combat**

If all entities on one side of a combat encounter are downed then combat ends with the not-fully-downed side emerging the victors. If all players are downed and lose, they awake in the nearest town being cared for by a doctor, and must pay the fees to heal to full.

Either side may also leave combat mid-way through, counting as a defeat. If players leave it must be a party consensus, fleeing to the nearest settlement, perhaps even bringing the aggressor back with them. If NPCs flee (which they can do individually) partially covered or uncovered players may make one turn of attacks against them before they get away, unless chased and kept up with by party members, in which they may make another turn.

After combat if they are the victors, players regain missing AP.