

6. Battle

This chapter will try to explain in more detail all the steps of combat between players and monsters. It will thus also serve as a summary of all the various information and formulas throughout the guide that handle combat.

Information in this chapter can generally all be found in other chapters. It is thus advisable to read this chapter together with the rest of the guide, as other chapters may have additional information that clarifies any situation.

As melee is treated differently than other attacks by the game, so will this chapter do (normal arrows are treated the same as spells). There is also quite a difference in who is the attacker and who is the target. There are four different situations, and this chapter will try to explain each of them.

Player versus Monster
Monster versus Player
Player versus Player
Monster versus Monster

Monster versus Monster is mainly about the golem, but in Hellfire it also takes care of berserk monsters. Traps are also treated as monsters in this chapter; that is, if a trap hits a player, it is explained under Monster versus Player.

As players are always updated before monsters, the player will always get in a hit first, should a monster and a player both hit at the same time. For players, the order would be in the order they have entered a game (with the exception that if someone leaves a game, a new player will take that one's place in the order). The order of updating is as follows:

1. Players
2. Monsters
3. Magical effects (includes arrows)

The update is done once every 0.05 seconds which explains why all timing information is given in steps of 0.05 seconds.

6.1 General information

Before we start discussing the actual combat, it is good to know some basic information about how players and monsters function. Each monster and player can exist in one of several possible states. Such states include things like walking, standing, attacking, casting spells, doing a hit recover, being stoned, and dying. A character or monster must finish the current action before it can start a new one. An exception to this is when you get hit. A hit will generally abort your or the monster's current action, and if the damage is high enough, put the victim into hit recovery (or if even greater into dying mode). Players, but never monsters, can also be put into a blocking state if carrying a shield. For information about how long it takes to do various actions, see chapter 2.3 for players and chapter 5.3.4 for monsters.

The detailed information below will generally be given as a numbered list which one steps through, step by step. At some points there will be notes that certain steps are skipped under some conditions or are only done in specific cases. It is therefore wise to read through all of the part that applies to the situation before drawing any conclusions as some actions are only valid if some specific conditions, which may be presented later, are met.

Most combat situations can be divided into a few specific main steps:

A. Pre-hit

This checks for things like if the target in question is really possible as a target. A player is, for example, mostly immune to attacks from himself, and monsters are similarly also immune to attacks from other monsters. It also includes checks if a target is available at all. For example, a bow may lose durability even if there is no target present, but for a melee weapon to lose durability it actually needs to hit something. This step will generally *not* be discussed here as it is quite uninteresting as a player of the game, but some things actually done in this step have instead been included in other steps.

B. To Hit	Here the game checks for the probability of hitting to see if a hit is really acquired. If no hit is acquired, the next steps are generally not done.
C. Blocking	When a player is hit, the game will check if he or she managed to block the attack or not. If a block was done, the Damage step is generally skipped.
D. Damage	Here the game will calculate the damage and take into consideration all the applicable modifications. It will also deal the damage to the target.
E. Hit consequences	This will do all the necessary checks for things that will affect both the target and the attacker if a hit occurs. This includes checks for hit recovery, life and mana stealing, death, and so on.

Some or all the steps above may be performed when an attack is done, and there might be additional steps not mentioned above under some circumstances.

There are also some steps done only in Hellfire or only in Diablo, in that case this is clearly mentioned at the start of the step in *italic*.

6.1.1 Mana Shield

Mana Shield is a spell that causes damage to your life to be taken instead from your mana. In the process it will also reduce the amount of damage taken. To avoid confusion on how the Mana Shield spell affects combat, it will be described in detail here. For information about such things like mana cost and requirements to read books, see chapter 4.

As already said, Mana Shield is a magical effect, and as such, it is handled in the step when all other magical effects are handled (see above) although it is processed after all other effects. It is very important to realize that the Mana Shield *never* affects any combat directly; that is, any attack, be it magical or melee, will be carried out normally and *will* do any damage to your life. Any attack will also put the target into any applicable status such as hit recovery or dying. It is not until the game processes the magical effects and reaches the Mana Shield that it actually changes the normal course of action. Unfortunately, as explained below, this will result in some bugs regarding the player status.

So, lets see in more detail how the Mana Shield works.

1. check if the player's current life has changed since last time; if not, exit
2. if the current life has increased since last time, set the new increased life as the value to be checked for in the future and then exit
3. calculate the decrease in life since last time, this is the damage taken since last time
4. if slvl=0, skip step 5 and 6
5. *in Diablo*, calculate damage - [damage/3]
6. *in Hellfire*, calculate damage - [damage/(3-slvl)] (if slvl is higher than 7, set slvl to 7)
7. restore current life to its initial value
8. remove the amount calculated in step 5 or 6 from current mana
9. if mana has not reached 0, then if the player was previously in dying mode, set player into standing mode, finally exit
10. if mana has reached 0 or gone below 0, set it to 0 and reduce life with the amount that was below 0
11. terminate the Mana Shield
12. if life has not reached 0, then if the player was previous in dying mode set player into standing mode, finally exit
13. set player into dying mode

As can be seen from the above, if the player was set to dying mode during the normal attacks, it will be put into standing mode by the Mana Shield, and thus avoid, for example, hit recovery, which would in some cases had been the more correct mode. It also prevents knock backs as it is not checked in the normal attack routines if the player died. Finally, it avoids any further attacks done in the last turn while the player was dead. An example of this would be if 3 monsters hit you all at the same time; the first one kills you, and the other two monsters' attacks are then not done as you are already dead. Later in the turn when the magical effects are processed, the Mana Shield restores your life, reduces the damage from mana instead, and puts you back into life. You have then effectively avoided the attack from the last two monsters. This does not happen too often, as the attacks of the monsters need to be done at the *exact* same time.

In Hellfire, there are some additional bugs related to the Mana Shield (those bugs were fixed in Diablo, version 1.07). When you run out of mana, and the Mana Shield is terminated, you will take excessive damage (up to twice the damage of the latest attack). It is also possible to cast more than one Mana Shield and although this will not affect the efficiency of the Mana Shield, you will take excessive damage from *each* Mana Shield when you run out of mana and all the Mana Shields are terminated.

6.1.2 Fire Wall, Flame Wave and Ring of Fire

Fire Wall and Flame Wave are special in that they are the only spells that can hurt the caster of the spells. They are also special in that when attacking players (including the caster), they will attack as if they were magic traps, that is, the To Hit is always 40%. When attacking monsters, they will use the normal To Hit calculations.

6.1.3 Reflect

Actually, the Reflect spell is handled properly in the step by step lists later on. I just wanted to mention that Reflect, contrary to Mana Shield, is handled within the actual damage routines by a flag set on the character. If set, the damage will be reduced properly and reflected back to the monster. This is how the Mana Shield should have been implemented to avoid all the problems and bugs associated with it.

6.1.4 Life and Mana stealing

Items with the effect of life stealing and mana stealing work independently of each other. An item with the 5% stealing will always supersede the 3% stealing and they are thus *not* cumulative (you can still have one item with 3% mana stealing and one with 5% life stealing though). Similarly, two items with 3% stealing or two with 5% stealing are not cumulative either.

The random life stealing effect only found on The Undead Crown *is* cumulative with other life stealing though as it is handled separately from normal life stealing. Life and mana stealing only work against monsters, never against players (the exception is the random life stealing, but as The Undead Crown only exists in single player it doesn't matter).

The table below summarizes the end result when you have two items of life or mana stealing. If there is any way to get three items with life or mana stealing, simply do it as a two step process, first checking two of the items, then take the end result and check it with the third effect.

	3% mana	5% mana	3% life	5% life	random life ¹
3% mana	3% mana	5% mana	3% mana 3% life	3% mana 5% life	3% mana 0-12.5% life
5% mana	5% mana	5% mana	5% mana 3% life	5% mana 5% life	5% mana 0-12.5% life
3% life	3% mana 3% life	5% mana 3% life	3% life	5% life	3-15.5% life
5% life	3% mana 5% life	5% mana 5% life	5% life	5% life	5-17.5% life
random life ¹	3% mana 0-12.5% life	5% mana 0-12.5% life	3-15.5% life	5-17.5% life	0-12.5% life

1 Steals a random amount of life between 0 and 12.5% each time you hit.

6.1.5 Fire and Lightning damage on melee weapons

When you do an attack that does additional fire or lightning damage, this will be handled by the game separately. Upon hit (even if the actual attack misses), the game will spawn an additional magical effect of the appropriate type, which will then be handled normally during the magical effect update. When hitting, the effect will use normal magical To Hit, and all resistance and other effects that normally work against magic apply normally. It will then deal the amount of fire or lightning damage your character currently does. The magical effect will only hit once but it will try to hit up to 7 times (9 if fire) before it ends.

6.1.6 Fire and Lightning damage on bows

Fire and lightning attacks on bows work pretty much the same as the ones on melee weapons. There are some exceptions. As arrows to start with are already effects, there is no need to spawn a special effect for the extra fire and lightning damage like there is for melee weapons. Instead, as soon as the fire or lightning arrow hits and has done its non magical damage, the effect will switch into a fire or lightning damage attack, quite similar to the one spawned for melee attacks. This extra fire or lightning attack will, as opposed to with melee attacks, hit more than once and will try 7 times (9 if fire) before it ends. Any extra fire or lightning damage from any item other than the bow will be added despite the fact that this is a ranged attack.

Fire and lightning arrows are quite buggy and the list below tries to summarize some of the bugs related to them.

- The to hit calculations for the fire and lightning attack part, although magical, still use normal arrow to hit formulas.
- The fire and lightning damage is *not* halved for player versus player like all other magical damage is.
- Unlike melee fire and lightning damage, they can hit and deal damage more than once. This might not be a bug but probably is.
- Damage calculations for the fire and lightning part still include the normal character damage and will even apply such modifiers as +% damage to the fire and lightning damage. Basically, the damage range of the fire and lightning damage is treated as the "bow damage range" and thus modified as appropriately for a normal arrow attack.
- Despite what is said above, both monsters and players *will* resist the damage if they have resistance to the appropriate magic type (fire or lightning).
- The actual fire and lightning damage will often not hit the same place as the arrow did, meaning one will often escape the extra high damage caused by fire and lightning bows. {blockable?}

Note that in the chapters below, the bugs regarding fire and lightning arrows will not be mentioned. The list above should be sufficient for knowing the end effects.

6.1.7 Charge attacks

Charges are special in that they are treated as magical effects while the actual charge is conducted; that is, the monster moves during the effect update phase, but as soon as it hits, it turns into an almost normal melee attack. Below are listed what special conditions apply to Charge attacks.

- A Gloom will never attack with its charge, it simply uses it as a mean of transportation.
- The base to hit of the monster charge attack is 500%, this is then modified normally according to chapter 6.2.3.
- Blocking is handled normally for a charge attack, and so is damage.
- Vipers will never put a target into hit recovery.
- Horned Demons and other monsters that get the special charge ability (unique monsters and their party) will automatically put a target into hit recovery upon hit and will also knock back the target.

Either intentionally or due to a bug, monsters that are charging, can at times cross lava that is otherwise impassable in the caves.

6.1.8 How spells really work

Before we go into detail about the actual attacks, it might be good to learn some basic information on how the game handles spells. This chapter will try to briefly explain this so that it not only gets easier to understand the chapter about non-melee attacks, but also how spells really work. Non-melee attacks are basically magic in nature. An exception is arrows, but think of them as any other projectile, like fireball, and you will see that there is really not much difference. Each spell or missile in the game is an effect, and in the effect update procedure each effect is processed and can do a number of things.

Easiest to understand are the missile spells, the ones like Fireball, Charged Bolt, or Holy Bolt. They are basically an effect that moves around in the dungeon at a certain speed and often in a straight line. As soon as it enters a location it checks if it contains a potential target (monsters are immune to other monsters and players are often immune to their own spells and so on). If there is a potential target, it will try to attack, and it is this attack this chapter on Battle will explain in more detail. It will also check if it has hit a wall or some other dungeon feature and, if so, terminate.

Some spells like Elemental and Flame Wave (which are in fact several flames, each an effect, moving side by side) will not terminate if they hit a target like a Fireball does. They will, regardless of if they hit or not, continue to move, and can thus hit multiple targets. Some spells consist of multiple missiles, such as Nova and Charged bolt. A Fire Wall is a typical example of a spell that can hit a target repeatedly.

Sometimes a spell can actually consist of several effects. The Lightning spell is such an example. The main spell is totally invisible and starts at the position of the source and travels away at a certain speed (see chapter 4.1.2). Each time it enters a new location it will spawn a new effect, a non moving lighting bolt with a certain duration that will sit in the location and try to hit anything in the location until its duration is over at which time it is removed. As the individual bolts are spawned with a certain delay the further away they are from the original source, they will also disappear with the same delay. The total effect is a seemingly moving stream of lighting bolts when in fact it is stationary bolts, where the duration of the individual bolts determines what looks like the length of the lighting stream. The speed of the stream is actually the speed of the initial invisible moving spell effect that spawns the bolts. Many other spells work in a similar way.

As already said, a spell can either be terminated upon hitting or go on even if it hits. In addition to that, most spells have a duration after which they will also be terminated. Most missile spells will also be terminated when they hit a wall or other dungeon feature. In addition to the above, each effect, when it attacks, can be set to be blockable or not. The check for blocking will only be done for those spells that are blockable. See chapter 4.1.2 for information about blockable spells. Finally, each effect can be either Fire, Lightning, Magic, or other (arrows are special).

Some effects will, of course, never attack; examples of such effects are Mana Shield and Infravision.

6.1.9 Possible targets of attacks

As already explained, an attack will typically always hit a specific location (with some exceptions). Normally, only a single monster or player can occupy a location at any time (although, due to bug, at times a monster and a player may end up in the same location, this is usually due to using the Teleport or Phasing spell). As long as a monster or a player is not moving between locations, it is always attackable in the location it occupies, regardless of what it do. Some activities will make the monster or player not hitable, but that is a different matter, examples of such things are an Illusion Weaver retreating, a player during the first 0.5 seconds upon entry of a new dungeon level. But what about when a monster or a player is walking between two locations. Where can it be attacked? The answer is that it depends on the type of attack and the direction of the walk. In the table below are listed all the various cases that may exist. It also tells in what location the monster or player is put in case the walk is interrupted, that is, when the target go into a hit recovery.

Situation	Target locations depending on direction of walk of target ¹		
	NW, N or NE ²	SW, S or SE ²	W or E ²
Player attack monster in melee	Both	Both	Both
Player attack player in melee	Both	Both	Both
Monster attack player in melee	Special	Special	Special
Monster attack monster in melee	Both ³	Both ³	Both ³
Spells ⁴ attacking player	Leaving	Entering	None
Spells ⁴ attacking monsters not Stone Cursed	Both	Both	Both
Spells ⁴ attacking monsters Stone Cursed	Leaving	Entering	None
Fire Wall, Flame Wave or Ring of Fire attacking player or monster	Leaving	Entering	None
Hit recovery location for player	Leaving	Entering	Leaving
Hit recovery location for monster	Leaving	Leaving	Leaving
Location used for distance calculations	Leaving	Entering ⁵	Leaving

1 Both means that the target can be hit in both the location he is leaving and the location he is entering, *leaving* means that the target can only be hit in the location it is leaving, *entering* means that the target can only be hit in the location it is entering, *none* means that it can't be hit in any of the locations. Monsters attacking players are handled in a special way explained below.

2 For the definition of north, see chapter 1.3.

3 A monster that attack another monster will always check for To Hit no matter where the target is at the time to check for To Hit. A monster will never initiate a melee attack unless the target at that time is in an adjacent location which means that usually it can hit in both locations and in addition further away in the rare occasions that the target has managed to get further away.

4 Excluding Fire Wall, Flame Wave and Ring of Fire.

5 Distance to a golem is measured to the Leaving location.

Monsters attacking players in melee does not specifically check for the location of the attack. Instead, upon attack it will check for the distance from the monster to the player. The locations used to calculate the distance is for the monster the location it is occupying and for the player it depends on the direction it is walking. When walking W, NW, N, NE or E, it is always the location the player is leaving and while walking SW, S or SE it is always the location the player is entering.

This has some important consequences that it is good to know about. When walking away from a monster it will thus always miss the check for the To Hit is done after you have started walking downwards on the screen and it will always have a normal chance of hitting you until you have completely reach your new location while walking upwards or sideways from the monster. Further more, if the walk is aborted by an attack, the player will be put in the location as indicated in the table above which means if you walk downwards, you will in such cases always be "pushed" downwards (regardless of the direction of the attacker) but when walking in other directions, you will be "pushed" back into the location you were leaving. Further more, when deciding upon what action to perform, see chapter 5.5 the distance is similarly always calculated in the same way. This result in the situation that when you are walking towards a monster it will only initiate a melee attack while you are walking, if you are walking SW, S or SE. If you walk in any other direction towards the monster it will consider you non adjacent up until you have reached the location adjacent to the monster.

Finally, as it is the distance from the monster to the player that counts when a monster attack a player, a monster will always check for To Hit against a player in those cases they occupy the same locations (can happen due to a bug) but a player will only be able to hit an adjacent location when doing a melee attack and can thus not attack the monster within its location.

6.1.10 Spell and arrow speeds

In the rest of the Guide, the speed of spells and arrows are given with a number in the 16 - 63 range (rarely going below 8). Here, a brief description is made in an attempt to convert those speeds to real speeds in the dungeon measured in reference to the tiles in the dungeon. This is also useful for estimating the distance penalty of arrows.

Any missile in the game (be it an arrow or a spell) will use true trigonometrical calculations for its movement, both for location and speed. Thus, it takes a missile longer to move through a location diagonally than straight along a side (roughly 40% longer) as opposed to character and monster movement which takes the same time regardless of it being diagonally or not. In addition, missiles actually move in small jumps each frame. That is, depending on their speed, they will move a certain distance each frame. For the purpose of keeping track of missiles, the game actually uses 22 extra bits of precision for its location, think of it as each location actually being divided in roughly 92 680 times 92 680 smaller locations. This higher precision is used for smooth movement *only*, for actual To Hit purposes the missile is simply considered to be in one location, regardless of where in the location it is. This have a few implications though. If the distance a missile is moved each frame is smaller than a location, it may end up staying in a location for more than one frame. In addition, it may, when not moving in straight angles along the locations, only enter the corner of some locations and may thus never really exist in a location that it in fact should pass through (for movement straight along the locations, this should never happen as it requires a speed value above 64 which does not exists in the game).

Some missile types prevents trying to hit the same location more than once (should it not manage to move into a new location when updated each frame) while most do not and may thus try to hit a target in a location more than once. This will of course make the total chance of hitting a target somewhat higher than it should be. This phenomenon is not that uncommon but extremely hard to predict or give exact numbers on as it depends both on the exact speed of the missile and in what direction you fire it. As you can virtually fire a missile in any direction, the possibilities are numerous. One should be aware of this phenomenon though as it might affect the result if anyone would actually measure the actual hit percentages of missiles.

To calculate the distance a missile of a specific speed travels, only examples of movement straight along the locations in the dungeon will be considered. It should be easy to apply to movement in any direction with true trigonometry. A missile with a speed value of 64, will travel exactly diagonally through one location each frame. This corresponds to traveling 1.4 locations in a straight line along the locations side. Alternatively you may say that a speed of 45.3 travels a location in one frame straight along the side of a location. The distance traveled per second can thus easily be calculated as:

Locations a missile travel per second: $25 \cdot \text{speed} / 45.3$

As the distance penalty of an arrow is increased by 1 each frame, the total distance penalty per location (see chapter 2.1.4 and 5.1 for more information) can be calculated as:

For characters: $\text{distance} \cdot \text{distance} / 2 = (45.3 / \text{speed}) \cdot (45.3 / \text{speed}) / 2 = 1\,048 / (\text{speed} \cdot \text{speed})$

For monsters: $\text{distance} \cdot \text{distance} = (45.3 / \text{speed}) \cdot (45.3 / \text{speed}) = 2\,048 / (\text{speed} \cdot \text{speed})$

As noted, for some locations, the fact that the missile will try to hit more than once may make the actual To Hit be slightly different. Also note that a missile will actually start traveling in the location where the player or monster it originates from is currently standing in. It may at times take more than one frame to reach the next location but in no case will a missile make a To Hit check in its location of origin.

6.1.11 Some general notes about the formulas

In most cases it should be obvious from whom the stat in a formula should be taken. Monsters do not have Dex or clvl for example. In some cases, for example with players attacking players or when there is some bonus, it might not be so obvious and there is an additional note telling if it is from the target or the attacker (or if it is for the monster or player as appropriate). This is also done when it is not obvious what value should be used, for example if it is a base To Hit or a modified To Hit.

Any part of the formula that is only applicable in Hellfire is shown in *italic*.

6.2 Melee attacks

Here we will only discuss melee attacks; this does *not* apply to attacks with bows, and is always done to an adjacent target.

6.2.1 Player versus Monster

To Hit

1. if the target monster is an Illusion Weaver that is currently running away, exit as it is at the moment immune to any attack
2. if the target monster is Stone Cursed, the attack is an automatic hit, go directly to damage calculations
3. calculate $50 + \text{Dex}/2 + \text{ToHit}_{\text{items}} + \text{clvl} + \text{bonus}_{\text{player}}$
4. *in Hellfire*, if the player has any item with the "penetrate armor" effect, temporarily reduce $\text{Ac}_{\text{monster}}$ as appropriate
5. subtract $\text{Ac}_{\text{monster}}$
6. *in Hellfire*, if the attack is an adjacent quarter damage attack, subtract $70 - 2 \cdot \text{clvl}$ (minimum 30)
7. if the value calculated is below 5, set it to 5
8. if the value calculated is above 95, set it to 95
9. the value now achieved is the final chance to hit (FTH)
10. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 3-8 above can be summarized to:

$$\text{FTH} = 50 + \text{Dex}/2 + \text{ToHit}_{\text{items}} + \text{clvl} + \text{bonus}_{\text{player}} - \text{Ac}_{\text{monster}} - \text{penalty}_{\text{quarter damage}}$$

- *In Diablo*, $\text{ToHit}_{\text{items}}$ includes the effect of items with the "penetrate armor" effect.
- The $\text{bonus}_{\text{player}}$ is 20 for Warriors and 0 for all other classes.
- $\text{penalty}_{\text{quarter damage}}$ only apply to certain attacks in Hellfire, see chapter 2.2.2 for more information.
- Note that if FTH is below 5 or above 95 it is adjusted to 5 and 95. This is commonly referred to as the auto hit and auto miss of a character.

Damage

1. calculate $\text{Rnd}[\text{max}_{\text{base weapon damage}} - \text{min}_{\text{base weapon damage}} + 1] + \text{min}_{\text{base weapon damage}}$ (this is basically a random value within the weapons base damage range)
2. add +% damage

3. add +damage
4. add character damage
5. if the attacker is a Warrior or Barbarian then double damage if $\text{Rnd}[100] < \text{clvl}$ (critical hit)
6. if the monster is undead or an animal, adjust the damage according to the table in chapter 5.1 under monster type, that is, under certain circumstances multiply damage by 1.5 or divide damage by 2
7. if the monster is a demon, triple the damage if the player is carrying any item with the "+200% damage versus demons" effect
8. *in Hellfire*, if the attacker has an item with the devastation effect and $\text{Rnd}[100] < 5$, triple the damage
9. *in Hellfire*, if the attacker has an item with the jester's effect 50% of the time multiply damage by $\text{Rnd}[100]/100$, the other 50% multiply damage by $5 \cdot (\text{Rnd}[100] + 20) / 100$
10. *in Hellfire*, if the attack is an adjacent "quarter" damage attack, divide the damage by 4 (hence the "quarter" damage)
11. *in Hellfire*, if the attacker has an item with the peril effect, double the damage
12. the value now achieved is the final damage (FD)
13. deal FD to the target

Steps 1-4 above will generate a damage value that is within the range shown for damage on the character screen.

Steps 5-12 above will further modify the damage by factors that will not be shown on the character screen.

Step 9 above is actually done as:

1. calculate $\text{Rnd}[200]$
2. if the value is below 100 multiply the damage by this value and then divide by 100
3. otherwise subtract 80 and multiply by 5, then multiply the damage by this value and divide by 100

Hit consequences

1. *in Hellfire*, if the attacker has an item of doppelganger's effect and the monster is not Diablo or an unique monster, duplicate the monster if $\text{Rnd}[100] < 5$
2. *in Hellfire*, if the attacker has an item with the peril effect, take the damage from step 3 under Damage above, modify it for the -damage effect and deal it to the attacker
3. if the attacker has an item equipped that has the "random life stealing" effect, calculate $\text{Rnd}[\text{FD}/8]$ and add this to current life (while checking so that current life never exceeds max life)
4. if the attacker has an item equipped that has 3% mana stealing, calculate $0.03 \cdot \text{FD}$
5. if the attacker has an item equipped that has 5% mana stealing, calculate $0.05 \cdot \text{FD}$
6. if the attacker do *not* have any item of *corruption* add the amount calculated in step 4 or 5 to the current mana (while checking so that current mana never exceeds max mana)
7. if the attacker has an item equipped that has 3% life stealing, calculate $0.03 \cdot \text{FD}$
8. if the attacker has an item equipped that has 5% life stealing, calculate $0.05 \cdot \text{FD}$
9. add the amount calculated in step 7 or 8 to the current life (while checking so that current life never exceeds max life)
10. *in Hellfire*, if the attacker hit and has an item equipped with the decay effect, subtract 5 from its To Hit bonus, if it reaches -100%, destroy the item
11. if the attacker hit, check for weapon durability loss
12. if the monster was *not* Stone Cursed and the player had an item with the "knock back" effect, move the monster one step backwards (backwards is defined according to the monster's facing)
13. mark the attacker to be entitled to experience points when the monster dies
14. if the target was not a golem and it was not resistant to the spell and $\text{FD} \geq \text{mlvl} + 3$, put monster into hit recovery; a Scavenger or Grave Digger will also be set in a mode to find a carcass to feast/dig upon
15. if the target was a Hidden type of monster and it was not resistant to the spell, put monster into hit recovery as well as in retreat mode (see chapter 5.5.9 under Hidden).
16. if the monster died, check for any item dropping (see chapter 3.8) and add any experience to the players that are eligible for it (see chapter 2.6)
17. if the monster died and it was Diablo, terminate game and show ending movie for players on dlvl 16

6.2.2 Player versus Player

To Hit

1. calculate $50 + \text{Dex}_{\text{attacker}}/2 + \text{ToHit}_{\text{items,attacker}} + \text{clvl}_{\text{attacker}} + \text{bonus}_{\text{attacker}}$
2. calculate $\text{Dex}_{\text{target}}/5 + \text{Ac}_{\text{items,target}} + \text{bonus}_{\text{target}}$
3. subtract the value in step 2 from the value in step 1

4. if the value calculated is below 5, set it to 5
5. if the value calculated is above 95, set it to 95
6. the value now achieved is the final chance to hit (FTH)
7. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 1-6 above can be summarized to:

$$\text{FTH} = 50 + \text{Dex}_{\text{attacker}}/2 + \text{ToHit}_{\text{items,attacker}} + \text{clvl}_{\text{attacker}} + \text{bonus}_{\text{attacker}} - \text{Dex}_{\text{target}}/5 - \text{Ac}_{\text{items,target}} - \text{bonus}_{\text{target}}$$

- In *Diablo*, $\text{ToHit}_{\text{items}}$ includes the effect of items with the "penetrate armor" effect.
- The $\text{bonus}_{\text{attacker}}$ is 20 for Warriors and 0 for all other classes.
- The $\text{bonus}_{\text{target}}$ is $\text{clvl}/4$ for Barbarians, depends on the armor type for Monks (0 for non unique plate, $\text{clvl}/2$ for non unique mail or unique plates and $2 \cdot \text{clvl}$ for light armor and unique mail or if naked), and 0 for all other classes.
- Note that if FTH is below 5 or above 95 it is adjusted to 5 and 95. This is commonly referred to as the auto hit and auto miss of a character.

Block

1. if the target is doing anything other than standing still or performing a melee attack, skip blocking
2. if the target is not a Monk and is not carrying a shield, skip blocking
3. if the target is a Monk and is not carrying a shield, a staff or has at least one hand bear, skip blocking
4. calculate $\text{Dex}_{\text{target}} + 2 \cdot \text{clvl}_{\text{target}} + \text{bonus}_{\text{target}}$
5. subtract $2 \cdot \text{clvl}_{\text{attacker}}$
6. if the value calculated is below 0, set it to 0
7. if the value calculated is above 100, set it to 100
8. the value now achieved is the final chance to block (FB)
9. a block of the attack is done if $\text{Rnd}[100] < \text{FB}$

The steps 3-8 above can be summarized to:

$$\text{FB} = \text{Dex}_{\text{target}} + 2 \cdot (\text{clvl}_{\text{target}} - \text{clvl}_{\text{attacker}}) + \text{bonus}_{\text{target}}$$

- The $\text{bonus}_{\text{target}}$ is 30 for Warriors and Barbarians, 25 for Monks and Bards, 20 for Rogues, and 10 for Sorcerers. Note that there seems to be a bug that makes all those bonus values be 0.
- It is possible to achieve 100% blocking.

Damage

1. calculate $\text{Rnd}[\text{max}_{\text{base weapon damage}} - \text{min}_{\text{base weapon damage}} + 1] + \text{min}_{\text{base weapon damage}}$ (this is basically a random value within the weapons base damage range)
2. add +% damage
3. add +damage
4. add character damage
5. if the attacker is a Warrior or Barbarian then double damage if $\text{Rnd}[100] < \text{clvl}_{\text{attacker}}$ (critical hit)
6. the value now achieved is the final damage (FD)
7. deal FD to the target

Steps 1-4 above will generate a damage value that is within the range shown for damage on the character screen.

Steps 5-6 above will further modify the damage by factors that will not be shown on the character screen.

Hit consequences

1. if the attacker has an item equipped that has the "random life stealing" effect, calculate $\text{Rnd}[\text{FD}/8]$ and add this to current life (while checking so that current life never exceeds max life). It is worth noticing that in normal *Diablo*, the random stealing effect is *only* present on a single player quest item, so this step is this never performed.
2. in *Hellfire*, if the attacker hit (regardless of blocking) and has an item equipped with the decay effect, subtract 5 from its To Hit bonus, if it reaches -100%, destroy the item
3. if the attacker hit (regardless of blocking), check for weapon durability loss

4. if the attacker hit and the target did not block, check if life went down to 0 or below, if so put target player into death mode and skip further steps
5. if $FD \geq clvl_{\text{target}}$ and the target did not block then put target player into hit recovery and check for durability loss on helm and armor
6. if the target blocked, put target player into block mode and check for durability loss on shield

For the probabilities of durability losses, see chapter 3.7.1.

6.2.3 Monster versus Player

To Hit

1. calculate $30 + \text{ToHit}_{\text{base,monster}} + 2 \cdot \text{mlvl}$
2. calculate $\text{Dex}/5 + \text{Ac}_{\text{items,player}} + \text{bonus}_{\text{player}} + 2 \cdot \text{clvl}$
3. subtract the value in step 2 from the value in step 1
4. *in Hellfire*, if the player has extra AC versus Demons or Undead, subtract 40/20 if the monster is of the correct type
5. if the value calculated is below 15, set it to 15
6. on dlv1 14 if the value calculated is below 20, set it to 20
7. on dlv1 15 if the value calculated is below 25, set it to 25
8. on dlv1 16 if the value calculated is below 30, set it to 30
9. the value now achieved is the final chance to hit (FTH)
10. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 1-9 above can be summarized to:

$$\text{FTH} = 30 + \text{ToHit}_{\text{base,monster}} + 2 \cdot (\text{mlvl} - \text{clvl}) - \text{Dex}/5 - \text{Ac}_{\text{items,player}} - \text{bonus}_{\text{player}}$$

- $\text{ToHit}_{\text{base,monster}}$ is the value found in the tables for each monster in chapter 5.2 and 5.4. For the second attack of Magma Demons it is 10 higher, and for the second attack of Lightning Demons it is 20 lower. For charges the base value is always 500%.
- For unique monsters, use $\text{mlvl}_{\text{battle}}$
- The $\text{bonus}_{\text{player}}$ is $\text{clvl}/4$ for Barbarians, depends on the armor type for Monks (0 for non unique plate, $\text{clvl}/2$ for non unique mail or unique plates, and $2 \cdot \text{clvl}$ for light armor and unique mail or if naked), and 0 for all other classes.
- Note that the FTH is adjusted for auto hit values.

Block

1. if the target is doing anything other than standing still or performing a melee attack, skip blocking
2. if the target is not a Monk and is not carrying a shield, skip blocking
3. if the target is a Monk and is not carrying a shield, a staff or has at least one hand bear, skip blocking
4. calculate $\text{Dex} + 2 \cdot \text{clvl} + \text{bonus}_{\text{player}}$
5. subtract $2 \cdot \text{mlvl}$
6. if the value calculated is below 0, set it to 0
7. if the value calculated is above 100, set it to 100
8. the value now achieved is the final chance to block (FB)
9. a block of the attack is done if $\text{Rnd}[100] < \text{FB}$

The steps 3-8 above can be summarized to:

$$\text{FB} = \text{Dex} + 2 \cdot (\text{clvl} - \text{mlvl}) + \text{bonus}_{\text{player}}$$

- The $\text{bonus}_{\text{player}}$ is 30 for Warriors and Barbarians, 25 for Monks and Bards, 20 for Rogues, and 10 for Sorcerers. Note that there seems to be a bug that makes all those bonus values be 0.
- For unique monsters, use $\text{mlvl}_{\text{battle}}$
- In the cases according to step 1-2 above when a block is not checked, the game actually DOES a random check, but the value checked against is 100 and thus will never result in a block.
- It is possible to achieve 100% blocking.

Damage

1. calculate $\text{Rnd}[\text{max}_{\text{base damage}} - \text{min}_{\text{base damage}} + 1] + \text{min}_{\text{base damage}}$ (this is basically a random value within the monsters base damage range)
2. add -damage
3. if damage is below 1, set it to 1
4. *in Hellfire*, if the player has a Reflect spell running, calculate the final reflected damage (FRD) by multiplying the damage by $(\text{Rnd}[10] + 20)/100$
5. *in Hellfire*, if the player has a Reflect spell running, subtract FRD from the damage calculated in steps 1-3
6. the value now achieved is the final damage (FD)
7. deal FD to target

Hit consequences

1. *in Hellfire*, if the monster hits and the player has a Reflect spell running, reflect FRD to it and check for death and hit recovery of the monster normally
2. if the monster hits and it is a Black Death, remove 1 permanently from life
3. if the player has any item equipped that has the "damage to attacker" effect, deal $\text{Rnd}[3] + 1$ damage to it and check for death and hit recovery of the monster normally
4. if the monster had the knock back ability, move the player one step backwards (backwards is defined according to the player's facing)
5. if the attacker hits and the target did not block, check if life went down to 0 or below; if so, put target player into death mode and skip further steps
6. if $\text{FD} \geq \text{clvl}$ and the target did not block, put target player into hit recovery and check for durability loss on helm and armor
7. if the target blocked, put target player into block mode and check for durability loss on shield

For the probabilities of durability losses, see chapter 3.7.1.

6.2.4 Monster versus Monster**To Hit**

1. if the target monster is an Illusion Weaver that is currently running away, exit as it is at the moment immune to any attack
2. if the target is a monster that is Stone Cursed, the attack is an automatic hit, go directly to damage calculations
3. the monsters base To Hit will also be the monsters final chance to hit (FTH) so the AC of the target has no effect
4. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

Damage

1. calculate $\text{Rnd}[\text{max}_{\text{base damage}} - \text{min}_{\text{base damage}} + 1] + \text{min}_{\text{base damage}}$ (this is basically a random value within the monsters base damage range)
2. the value now achieved is the final damage (FD)
3. deal FD to target

Hit consequences

1. if the target was *not* Stone Cursed and the attacker had attack type with the "knock back" effect, move the target one step backwards (backwards is defined according to the target's facing).
2. if the attacker was a golem, mark the golem's owner to be entitled to experience points when the monster dies
3. if $\text{FD} \geq \text{mlvl}_{\text{target}} + 3$ or if the target is a Hidden type of monster put target into hit recovery; a Scavenger or Grave Digger will also be set in a mode to find a carcass to feast/dig upon
4. if the target died, check for any item dropping (see chapter 3.8) and add any experience to the players that are eligible for it (see chapter 2.6)
5. if the target died and it was Diablo, terminate game and show ending movie

6.3 Non melee attacks

Here we will deal with all other attacks, which include spells, arrows and traps (which are either spells or arrows). As there are so many more possibilities and special cases, some sections have been divided up to handle specific cases.

6.3.1 Player versus Monster

To Hit

1. if the effect is Holy Bolt and the monster is not undead or Diablo, exit as other monsters are immune
2. if the target monster is an Illusion Weaver that is currently running away, exit as it is at the moment immune to any attack
3. if the monster is immune to the spell type, exit as it can't be damaged
4. if the target is a monster that is Stone Cursed, the attack is an automatic hit, go directly to damage calculations
5. if the effect is an arrow, calculate $50 + \text{Dex} + \text{ToHit}_{\text{items}} + \text{clvl} + \text{bonus}_{\text{player}} - \text{distance} \cdot \text{distance} / 2$
6. if the effect is an arrow, subtract $\text{Ac}_{\text{monster}}$
7. if the effect is a spell, calculate $50 + \text{Mag} + \text{bonus}_{\text{player}}$
8. if the effect is a spell, subtract $2 \cdot \text{mlvl}$
9. if the value calculated is below 5, set it to 5
10. if the value calculated is above 95, set it to 95
11. the value now achieved is the final chance to hit (FTH)
12. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 5-11 above can be summarized to:

$$\text{FTH}_{\text{arrow}} = 50 + \text{Dex} + \text{ToHit}_{\text{items}} + \text{clvl} + \text{bonus}_{\text{player}} - \text{distance} \cdot \text{distance} / 2 - \text{Ac}_{\text{monster}}$$

$$\text{FTH}_{\text{spell}} = 50 + \text{Mag} + \text{bonus}_{\text{player}} - 2 \cdot \text{mlvl}$$

- The $\text{bonus}_{\text{player}}$ for arrows is 10 for Warriors and Bards, 20 for Rogues, and 0 for all other classes.
- The $\text{bonus}_{\text{player}}$ for spells is 20 for Sorcerers, 10 for Bards, and 0 for all other classes.
- Note that if FTH is below 5 or above 95 it is adjusted to 5 and 95. This is commonly referred to as the auto hit and auto miss of a character.

Damage

1. for spells, the actual damage is calculated upon cast. For information about damage ranges for spells, see chapter 4.1.2.
2. if the effect is an arrow, calculate $\text{Rnd}[\text{max}_{\text{base weapon damage}} - \text{min}_{\text{base weapon damage}} + 1] + \text{min}_{\text{base weapon damage}}$ (this is basically a random value within the weapons base damage range)
3. if the effect is an arrow, add +% damage
4. if the effect is an arrow, add +damage
5. if the effect is an arrow, add character damage
6. if the effect is a spell and the monster has resistance, divide damage by 4
7. if the spell is Bone Spirit, damage is $[\text{current life}_{\text{monster}}] / 3$
8. the value now achieved is the final damage (FD)
9. deal FD to the target

Steps 2-5 above will generate a damage value that is within the range shown for damage on the character screen.

Note that in Hellfire, Diablo and Bone Demons have resistance to Holy Bolt.

Hit consequences

1. for firing bows, the durability loss check is done regardless of a hit or miss; it is checked each time the character *fires*
2. if the monster was *not* Stone Cursed and the player had a bow with the "knock back" effect, move the monster one step backwards (backwards is defined according to the monster's facing)
3. if the attack was done with arrows or by a spell to which the monster was not resistant, mark the attacker to be entitled to experience points when the monster die
4. if the target was not a golem and it was not resistant to the spell and $\text{FD} \geq \text{mlvl} + 3$, put monster into hit recovery; a Scavenger or Grave Digger will also be set in a mode to find a carcass to feast/dig upon
5. if the target was a Hidden type of monster and it was not resistant to the spell, put monster into hit recovery as well as in retreat mode (see chapter 5.5.9 under Hidden).
6. if the monster had no specific target before, set the player as the target, this basically activates a monster that gets hit regardless of distance

7. if the monster died, check for any item dropping (see chapter 3.8) and add any experience to the players that are eligible for it (see chapter 2.6)
8. if the monster died and it was Diablo, terminate game and show ending movie

6.3.2 Player versus Player

To Hit

1. if the target is immune to the spell type, exit as it can't be damaged; this is true for spells like Apocalypse and Holy Bolt
2. if the effect is an arrow, calculate $50 + \text{Dex}_{\text{attacker}} + \text{ToHit}_{\text{items,attacker}} + \text{clvl}_{\text{attacker}} + \text{bonus}_{\text{attacker}} - \text{distance} \cdot \text{distance} / 2$
3. if the effect is an arrow, calculate $\text{Dex}_{\text{target}} / 5 + \text{Ac}_{\text{items,target}} + \text{bonus}_{\text{target}}$ 2.1.4
4. subtract the value in step 3 from the value in step 2
5. if the effect is a spell, calculate $50 + \text{Mag}_{\text{attacker}} + \text{bonus}_{\text{attacker}}$
6. if the effect is a spell, subtract $2 \cdot \text{clvl}_{\text{target}}$
7. if the value calculated is below 5, set it to 5
8. if the value calculated is above 95, set it to 95
9. the value now achieved is the final chance to hit (FTH)
10. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 2-9 above can be summarized to:

$$\text{FTH}_{\text{arrow}} = 50 + \text{Dex}_{\text{attacker}} + \text{ToHit}_{\text{items,attacker}} + \text{clvl}_{\text{attacker}} + \text{bonus}_{\text{attacker}} - \text{distance} \cdot \text{distance} / 2 - \text{Dex}_{\text{target}} / 5 - \text{Ac}_{\text{items,target}} - \text{bonus}_{\text{target}}$$

$$\text{FTH}_{\text{spell}} = 50 + \text{Mag}_{\text{attacker}} + \text{bonus}_{\text{attacker}} - 2 \cdot \text{clvl}_{\text{target}}$$

- The $\text{bonus}_{\text{attacker}}$ for arrows is 10 for Warriors and Bards, 20 for Rogues, and 0 for all other classes.
- The $\text{bonus}_{\text{attacker}}$ for spells is 20 for Sorcerers, 10 for Bards, and 0 for all other classes.
- The $\text{bonus}_{\text{target}}$ is $\text{clvl} / 4$ for Barbarians, depends on the armor type for Monks (0 for non unique plate, $\text{clvl} / 2$ for non unique mail or unique plates and $2 \cdot \text{clvl}$ for light armor and unique mail or if naked) and 0 for all other classes.
- Note that if FTH is below 5 or above 95 it is adjusted to 5 and 95. This is common referred to as the auto To Hit and auto miss of a character.

Block

1. if the target is doing anything other than standing still or performing a melee attack, skip blocking
2. if the target is not a Monk and is not carrying a shield, skip blocking
3. if the target is a Monk and is not carrying a shield, a staff or has at least one hand bear, skip blocking
4. if the spell type is not blockable, skip blocking
5. if the spell type is blockable but the target has resistance to it, skip blocking
6. calculate block $\text{Dex}_{\text{target}} + 2 \cdot \text{clvl}_{\text{target}} + \text{bonus}_{\text{target}}$
7. subtract $2 \cdot \text{clvl}_{\text{attacker}}$
8. if the value calculated is below 0, set it to 0
9. if the value calculated is above 100, set it to 100
10. the value now achieved is the final chance to block (FB)
11. a block of the attack is done if $\text{Rnd}[100] < \text{FB}$

The steps 5-10 above can be summarized to:

$$\text{FB} = \text{Dex}_{\text{target}} + 2 \cdot (\text{clvl}_{\text{target}} - \text{clvl}_{\text{attacker}}) + \text{bonus}_{\text{target}}$$

- The $\text{bonus}_{\text{target}}$ is 30 for Warriors and Barbarians, 25 for Monks and Bards, 20 for Rogues, and 10 for Sorcerers. Note that there seems to be a bug that makes all those bonus values be 0.
- In the cases according to step 1-4 above when a block is not checked, the game actually DOES a random check but the value checked against is 100 and thus will never result in a block.
- It is possible to achieve 100% blocking.
- Although a player will block monsters even with resistance in Hellfire, they will never block an attack from another player when having resistance.

Damage

1. for spells, the actual damage is calculated upon cast. For information about damage ranges for spells, see chapter 4.1.2.
2. if the effect is an arrow, calculate $\text{Rnd}[\text{max}_{\text{base weapon damage}} - \text{min}_{\text{base weapon damage}} + 1] + \text{min}_{\text{base weapon damage}}$ (this is basically a random value within the weapons base damage range)
3. if the effect is an arrow, add +% damage
4. if the effect is an arrow, add +damage
5. if the effect is an arrow and the attacker is a Rogue, add character damage
6. if the effect is an arrow and the attacker is a Warrior or Sorcerer, add double character damage
7. if the spell is Bone Spirit, damage is $\lfloor \text{current life}_{\text{target}} \rfloor / 3$
8. if the effect is a spell, divide damage by 2
9. if the effect is a spell and the target has resistance to it, reduce the damage by the amount specified by the resistance
10. the value now achieved is the final damage (FD)
11. deal FD to the target

Steps 2-5 above will generate a damage value that is within the range shown for damage on the character screen.

Step 6 above will further modify the damage by factors that will not be shown on the character screen. Shown on character screen is normal character damage, not double, for all character classes.

Hit consequences

1. for firing bows, the durability loss check is done regardless of a hit or miss; it is checked each time the character *fires*
2. if the attacker hits and the target did not block, check if life went down to 0 or below; if so, put target player into death mode and skip further steps
3. if the target did not block and effect was an arrow or it was a spell and the target had no resistance to the spell type, check if $\text{FD} \geq \text{clvl}_{\text{target}}$ and, if so, put target player into hit recovery and check for durability loss on helm and armor
4. if the target blocked, put target player into block mode and check for durability loss on shield

6.3.3 Monster/Trap versus Player

Fire Wall, Flame Wave and Ring of Fire also uses this chapter when attacking players.

To Hit

1. if the effect is an arrow from a monster, calculate $30 + \text{ToHit}_{\text{base,monster}} + 2 \cdot \text{mlvl} - 2 \cdot \text{distance}$
2. if the effect is an arrow from a monster, subtract $\text{Dex}/5 + \text{Ac}_{\text{items,player}} + \text{bonus}_{\text{player}} + 2 \cdot \text{clvl}$
3. if the effect is an arrow from a trap, calculate $100 - (\text{Dex}/5 + \text{Ac}_{\text{items,player}} + \text{bonus}_{\text{player}} + 2 \cdot \text{clvl}) / 2 - 2 \cdot \text{distance}$
4. if the effect is a spell from a monster, calculate $40 + 2 \cdot \text{mlvl}$
5. if the effect is a spell from a monster, subtract $2 \cdot \text{clvl}$
6. if the effect is a spell from a trap or a player, set To Hit to 40
7. if the value calculated is below 10, set it to 10
8. on dlvl 14 if the value calculated is below 20, set it to 20
9. on dlvl 15 if the value calculated is below 25, set it to 25
10. on dlvl 16 if the value calculated is below 30, set it to 30
11. the value now achieved is the final chance to hit (FTH)
12. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 1-11 above can be summarized to:

$$\text{FTH}_{\text{monster arrow}} = 30 + \text{ToHit}_{\text{base,monster}} + 2 \cdot \text{mlvl} - 2 \cdot \text{distance} - \text{Dex}/5 - \text{Ac}_{\text{items,player}} - \text{bonus}_{\text{player}} - 2 \cdot \text{clvl}$$

$$\text{FTH}_{\text{trap arrow}} = 100 - (\text{Dex}/5 + \text{Ac}_{\text{items,player}} + \text{bonus}_{\text{player}} + 2 \cdot \text{clvl}) / 2 - 2 \cdot \text{distance}$$

$$\text{FTH}_{\text{monster spell}} = 40 + 2 \cdot \text{mlvl} - 2 \cdot \text{clvl}$$

$$\text{FTH}_{\text{trap spell}} = 40$$

$$FTH_{\text{player spell}} = 40$$

- $ToHit_{\text{base,monster}}$ is the value found in the tables for each monster in chapter 5.2 and 5.4.
- Fire Wall, Flame Wave and Ring of Fire always attack players as if they were traps.
- For unique monsters, use $mlvl_{\text{battle}}$
- The $bonus_{\text{player}}$ is $clvl/4$ for the Barbarian, depends on the armor type for Monks (0 for non unique plate, $clvl/2$ for non unique mail or unique plates and $2 \cdot clvl$ for light armor and unique mail or if naked) and 0 for all other classes.
- Note that the FTH is adjusted for auto hit values.

Block

1. if the target is doing anything other than standing still or performing a melee attack, skip blocking
2. if the target is not a Monk and is not carrying a shield, skip blocking
3. if the target is a Monk and is not carrying a shield, a staff or has at least one hand bear, skip blocking
4. if the spell type is not blockable, skip blocking
5. *in Diablo*, if the spell type is blockable but the target has resistance to it, skip blocking
6. if the attacker is a monster calculate block $Dex + 2 \cdot clvl + bonus_{\text{player}}$
7. if the attacker is a monster subtract $2 \cdot mlvl$
8. if the attacker is a trap, calculate $Dex_{\text{target}} + bonus_{\text{target}}$
9. if the value calculated is below 0, set it to 0
10. if the value calculated is above 100, set it to 100
11. the value now achieved is the final chance to block (FB)
12. a block of the attack is done if $Rnd[100] < FB$

The steps 5-11 above can be summarized to:

$$FB = Dex + 2 \cdot (clvl - mlvl) + bonus_{\text{player}}$$

- The $bonus_{\text{player}}$ is 30 for Warriors and Barbarians, 25 for Monks and Bards, 20 for Rogues, and 10 for Sorcerers. Note that there seems to be a bug that makes all those bonus values be 0.
- For unique monsters, use $mlvl_{\text{battle}}$
- In the cases according to step 1-4 above when a block is not checked, the game actually DOES a random check, but the value checked against is 100 and thus will never result in a block.
- It is possible to achieve 100% blocking.

Damage

1. for spells and traps, the actual damage is calculated upon cast. For information about damage ranges for spells, see chapter 4.1.2 for traps and chapter 4.1.2 for spells from players.
2. if the attacker is a trap and the player has an item of thieves, divide damage by 2
3. *in Hellfire*, if the attacker is *not* a trap, divide damage by 2
4. add -damage
5. if damage is below 1, set it to 1
6. if the effect is a spell and the target has resistance to it, reduce the damage by the amount specified by the resistance
7. the value now achieved is the final damage (FD)
8. deal FD to target

Hit consequences

1. if the effect was an arrow and the monster had the knock back ability, move the player one step backwards (backwards is defined according to the player's facing)
2. if the attacker hit and the target did not block, check if life went down to 0 or below; if so, put target player into death mode and skip further steps
3. if the target did not block and effect was an arrow or it was a spell and the target had no resistance to the spell type, check if $FD \geq clvl$ and, if so, put target player into hit recovery and check for durability loss on helm and armor
4. if the target blocked, put target player into block mode and check for durability loss on shield

6.3.4 Monster/Trap versus Monster

To Hit

1. if the target monster is an Illusion Weaver that is currently running away, exit as it is at the moment immune to any attack
2. if the monster is immune to the spell type, exit as it can't be damaged
3. if the target is a monster that is Stone Cursed, the attack is an automatic hit; go directly to damage calculations
4. if the effect is an arrow, calculate $90 - A_{\text{target}} - \text{distance}$
5. if the effect is a spell, calculate $90 - A_{\text{target}}$
6. if the value calculated is below 5, set it to 5
7. if the value calculated is above 95, set it to 95
8. the value now achieved is the final chance to hit (FTH)
9. a hit is secured if $\text{Rnd}[100] < \text{FTH}$

The steps 4-7 above can be summarized to:

$$\text{FTH}_{\text{arrow}} = 90 - A_{\text{target}} - \text{distance}$$

$$\text{FTH}_{\text{spell}} = 90 - A_{\text{target}}$$

- Note that if FTH is below 5 or above 95 it is adjusted to 5 and 95. This is the same auto To Hit and auto miss that characters have.

Damage

1. for spells and traps, the actual damage is calculated upon cast. For information about damage ranges for spells, see chapter 4.1.2.
2. if the effect is a spell and the monster has resistance, divide damage by 4
3. the value now achieved is the final damage (FD)
4. deal FD to the target

Hit consequences

1. if the target was not a golem and it was not resistant to the spell and $\text{FD} \geq \text{mlvl} + 3$, put monster into hit recovery; a Scavenger or Grave Digger will also be set in a mode to find a carcass to feast/dig upon
2. if the target was a Hidden type of monster and it was not resistant to the spell, put monster into hit recovery as well as in retreat mode (see chapter 5.5.9).
3. if the monster died, check for any item dropping (see chapter 3.8) and add any experience to the players that are eligible for it (see chapter 2.6)
4. if the monster died and it was Diablo, terminate game and show ending movie