

Final Fantasy III (Import) Damage Formula FAQ

by instructrtrepe

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FF3j DAMAGE CALCAULATION FORMULA FAQ

Version 1.02

by J.L. Tseng, 2004

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I. INTRODUCTION

This is my attempt at creating a FF3j damage formula that can predict how much damage will be done from various attacks within the game. Note that I'm NOT an employee at Square nor have access to their source code or algorithms. All formulas in this FAQ were derived from experimental observations done by me. This means that although I've done quite a lot of carefully set up experiments to be very confident with the results in this FAQ, I by no means guarantee that everything is absolutely 100% correct, nor do I disclude the possibility that I have may missed some things. If you do notice any discrepancies, errors, omissions, etc. or have any suggestions or comments, please send your feedback to instructrtrepe@hotmail.com, or post at the FF3j message board at <http://www.gamefaqs.com>

II. CREDITS AND ACKNOWLEDGEMENTS

From the FF3j message board at <http://www.gamefaqs.com>, I'd like to thank Sir Bahamut for all his feedback and help and sqpat17 for finding and posting the hex offset data for the FF3j rom.

Using sqpat17's hex offset data, I extracted the hex data from the rom myself to create my own data tables, but FAQ's and guides that I used as references to verify my own data:

lordskylark's extended Ff3j monster list at http://www.geocities.com/lord_skylark
cidolfas's FF3j shrine at <http://www.rpgclassics.com/shrines/nes/ff3/>
BSiron's FFII (US) FAQ at <http://www.gamefaqs.com>

FF3j actually shares a lot of similar damage formula mechanics as FFIV, so BSiron's FAQ for FFII(US) provided an excellent starting point for my FAQ.

My emulator of choice for this game is VirtuaNES at <http://virtuanes.s1.xrea.com:8080/>
The translation .ips file I used was created by Alex W. Jackson, Neill Corlett and SoM2Freak (downloaded at <http://www.zophar.net>)

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III. VERSION HISTORY

Version 1.0: Initial release.
Version 1.01: Corrected some spelling errors. Thanks to Sir Bahamut for spotting and notifying me of them!
Version 1.02: More spelling, grammar fixes.
Version 1.03: Corrected the mix-up between Intellect and Spirit in the Glossary section for White, Black and Call Magic Multipliers

IV. BRIEF OVERVIEW OF FAQ CONTENTS

Section VI contains a glossary and explanation of all the terms I've used in this FAQ.

Sections VII and VIII contain a brief overview and summary of the damage calculation formula and the various effects of commands, spells, elemental and status effects. If you want a general understanding of how damage is calculated, these are the sections you want to read.

Sections IX, X and XI provide detailed steps on the damage calculation formula for character attacks, monster attacks and magic attacks. They essentially take the information in Sections VII and VIII and explicitly state all the steps that would occur for each type of attack.

Section XII is the data reference section. It contains weapon, armour, skill, magic and enemy magic data that is used in the damage calculation formula.

V. NOTES

This game uses integer values. Therefore after every division shown in any formula in this FAQ, immediately round down before proceeding with any further calculation.

Due to the way Level and Skill are stored internally in the game, all references to Skill and Level in this FAQ actually refer to one minus the value that is displayed in the game. For example, at the start of New Game, all characters begin at Level 0 and Skill 0 for calculation purposes of this FAQ.

VI. GLOSSARY AND DEFINITIONS

Just so everyone's on the same page in terms of terminology and for those who may be unfamiliar with some the stats in FF3j, here's a list of stats that are used in this FAQ.

LEVEL: Character level. This is displayed in the game character status screen as "Level". As you increase in level, your main stats (Strength, Agility, Vitality, Intellect, Spirit) increase as well as your HP and MP. Level affects your Attack Multiplier, Defense Multiplier and your Magic Attack Multiplier, as well as Steal Rate. The difference between your level and monster level affects whether an enemy will run from you, the chances of getting "First Strike" or "Ambushed" and whether the Kill spell has a chance of succeeding. Monsters also have a Level stat. In their case, however, Level only affects Magic Attack Multiplier.

SKILL: The character's Skill level for his current job. This is displayed in the game character status screen as "Skill". Skill points are earned in battle and are recorded separately for each job for every character. Skill affects your Attack Damage, Hit%, Magic Attack Multiplier and Steal rate. It also lowers the amount of Capacity points required to change into that job. Monsters also have a Skill stat. In their case, however, Skill only affects Magic Attack Multiplier.

STRENGTH: The character's Strength, displayed in the game character status screen as "Strength". Strength affects your Attack Damage.

AGILITY: The character's Agility, displayed in the game character status screen as "Agility". Agility affects your Hit%, Attack Multiplier and Magic Defense Multiplier.

VITALITY: The character's Vitality, displayed in the game character status screen as "Vitality". Vitality affects your Defense. Jobs with high Vitality also get a higher HP gain on levelling up.

INTELLECT: The character's Intellect, displayed in the game character status screen as "Intellect". Intellect affects your Black Magic Attack Damage, Call Magic Attack Damage, Black Magic Hit%, Call Magic Hit%, Black Magic Attack Multiplier, Call Magic Attack Multiplier, Magic Evade% and Magic Defense Multiplier. Monsters also have an Intellect stat. In their case, however, Intellect does not affect Magic Evade% nor Magic Defense Multiplier.

SPIRIT: The character's Spirit, displayed in the game character status screen as "Spirit". Spirit affects your White Magic Attack Damage, White Magic Hit%, White Magic Attack Multiplier, Magic Evade% and Magic Defense Multiplier. Monsters also have a Spirit stat. In their case, however, Spirit does not affect Magic Evade% nor Magic Defense Multiplier.

ATTACK DAMAGE: The base amount of damage a character will do when attacking physically. This is displayed in the game character status screen to the right of "Att. ?X ", parallel to the Strength stat. If a character has a weapon in both hands, the Attack Damage shown on the status screen is the sum of the Attack Damages of each hand. The formula for Attack Damage is:

$$\text{Attack Damage} = (\text{Weapon Damage}) + (\text{Strength}/4)$$

Monsters also have an Attack Damage stat. In their case, however, they do not follow the above formula and have their own specified value.

ATTACK MULTIPLIER: The maximum number times a character can hit in one physical attack command. This is displayed in the game character status screen right after "Att.", to the left of the Attack Damage stat. If a character has a weapon in both hands, the Attack Multiplier shown on the status screen is the sum of the Attack Multipliers of each hand. The formula for Attack Multiplier is:

$$\text{Attack Multiplier} = (\text{Agility}/16) + (\text{Level}/16) + 1$$

Monsters also have an Attack Multiplier stat. In their case, however, they do not follow the above formula and have their own specified value.

HIT%: The chance a character has to land a hit. This is displayed in the game character status screen as "Hit %". If a character has a weapon in both hands, the Hit% shown on the status screen is the average of the Hit% of each hand. The formula for Hit% is:

$$\text{Hit\%} = (\text{Weapon Hit\%}) + (\text{Agility}/4) + (\text{Skill}/4)$$

Monsters also have a Hit% stat. In their case, however, they do not follow the above formula and have their own specified value.

DEFENSE: The amount of damage that any physical attack made on the character will be reduced by. This is displayed in the game character status screen to the right of "Def. ?X ", parallel to the Agility stat. The formula for Defense is:

$$\text{Defense} = \text{sum of all worn (Armour Defense)} + (\text{Vitality}/2)$$

Monsters also have a Defense stat. In their case, however, they do not follow the above formula and have their own specified value.

DEFENSE MULTIPLIER: The maximum number of hits a character can avoid from a physical attack made on that character. This is displayed in the game character status screen right after "Def.", to the left of the Defense stat. The formula for Defense Multiplier is:

(with shield):

$$\text{Defense Multiplier} = (\text{Agility}/16) + (\text{Level}/16) + 1 * (\text{number of shields equipped})$$

(without shield):

$$\text{Defense Multiplier} = (\text{Agility}/32) + (\text{Level}/32)$$

Monsters also have a Defense Multiplier stat. In their case, however, they do not follow the any of the above formulas and have their own specified value.

EVADE%: The chance a character has to evade a hit. This is displayed in the game character status screen as "Evade". The formula for Evade% is:

$$\text{Evade\%} = \text{sum of all worn (Armour Evade\%)} + (\text{Agility}/4)$$

Monsters also have an Evade% stat. In their case, however, they do not follow the above formula and have their own specified value.

MAGIC DEFENSE: The amount of damage that any magic attack made on the character will be reduced by. This is displayed in the game character status screen as "M. Def.". The formula for Magic Defense is:

$$\text{Magic Defense} = \text{sum of all worn (Armour Magic Defense)}$$

Monsters also have a Magic Defense stat. In their case, however, they do not follow the above formula and have their own specified value.

MAGIC EVADE%: The chance a character has to evade a magic hit. This is displayed in the game character status screen as "M. Evade". The formula for Magic Evade% is:

$$\text{Magic Evade\%} = (\text{Intellect}/2) + (\text{Spirit}/2)$$

Monsters also have a Magic Evade% stat. In their case, however, they do not follow the above formula and have their own specified value.

MAGIC ATTACK MULTIPLIER: The maximum number times a character can hit in one magic attack command. This is not displayed anywhere in the game. The number of hits that succeed are not shown in battle either, only the final resulting magic damage. There are three different types of magic, and thus three different formulas for Magic Attack Multiplier:

$$\text{Black Magic Attack Multiplier} = (\text{Intellect}/16) + (\text{Level}/16) + (\text{Skill}/32) + 1$$
$$\text{White Magic Attack Multiplier} = (\text{Spirit}/16) + (\text{Level}/16) + (\text{Skill}/32) + 1$$
$$\text{Call Magic Attack Multiplier} = (\text{Intellect}/8) + (((\text{Skill}/8)*3)/2) + 1$$

Monsters use the same formulas shown above when attacking with magic.

MAGIC HIT%: The chance a character has to land a magic hit. This is not displayed anywhere in the game. There are three different types of magic, and thus three different formulas for Magic Hit%:

Black Magic Hit% = (Spell Hit%) + (Intellect/2)

White Magic Hit% = (Spell Hit%) + (Spirit/2)

Call Magic Hit% = (Spell Hit%) + (Intellect)

Monsters use the same formulas shown above when attacking with magic.

MAGIC ATTACK DAMAGE: The base amount of damage a character will do when attacking with magic. This is not displayed anywhere in the game. There are four different formulas for Magic Attack Damage:

Black Magic Attack Damage = (Spell Damage) + (Intellect/2)

For offensive White spells (Holy, Aero2, Aero):

White Magic Attack Damage = (Spell Damage) + (Spirit/2)

For non-offensive White spells (Cure4, Cure3, Cure2, Cure, Haste, Safe):

White Magic Attack Damage = (Spell Damage)

Call Magic Attack Damage = (Spell Damage) + (Intellect)

Monsters use the same formulas shown above when attacking with magic.

MAGIC DEFENSE MULTIPLIER: The maximum number of hits a character can avoid from a magic attack made on that character. This is not displayed anywhere in the game. The formula for Magic Defense Multiplier is:

Magic Defense Multiplier = (Agility/32) + (Intellect/32) + (Spirit/32)

Monsters also have a Magic Defense Multiplier stat. In their case, however, they do not follow the above formula and have their own specified value.

WEAPON DAMAGE: The Attack Damage of the equipped weapon. Each weapon has their own Weapon Damage value (see Weapon Data).

WEAPON HIT%: The Hit% of the weapon equipped. Each weapon has their own Weapon Hit% value (see Weapon Data).

ARMOUR DEFENSE: The Defense of the armour equipped. Each armour has their own Armour Defense value (see Armour Data).

ARMOUR EVADE%: The Evade% of the armour equipped. Each armour has their own Armour Evade% value (see Armour Data).

ARMOUR MAGIC DEFENSE: The Magic Defense of the armour equipped. Each armour has their own Armour Magic Defense value (see Armour Data).

SPELL DAMAGE: The Magic Attack Damage of that spell. Each spell has their own Spell Damage value (see Magic Data).

SPELL HIT%: The Magic Hit% of that spell. Each spell has their own Spell Hit% value (see Magic Data).

ITEM MAGIC ATTACK MULTIPLIER: When items are used, they essential cast the spell that is associated with it. Items use their own Magic Attack Multiplier, though (see Item Data).

ITEM MAGIC HIT%: When items are used, they essential cast the spell that is

associated with it. Items always have a Magic Hit% of 100.

BLACK MAGIC: Magic spells usable by the Black Wizard, Red Wizard, Warlock and Sage. Also, for damage calculation purposes, all Terrain commands used by the Geomancer are considered Black magic.

WHITE MAGIC: Magic spells usable by the White Wizard, Red Wizard, Hunter, Mystic Knight, Shaman and Sage. Note that there is a different Magic Attack Damage formula for offensive White magic (Holy, Aero2, Aero) and non-offensive White magic (Cure4, Cure3, Cure2, Cure, Haste, Safe). Also, Toad, Mini, Life and Life2 have a Magic Hit% of 100 when cast on a party member. When cast on an enemy, the Magic Hit% listed in the Magic Data section is used.

CALL MAGIC: Magic spells usable by the Conjurer, Summoner and Sage.

VULNERABLE STATE: There can be times when a character becomes vulnerable. In these cases, the character's Defense, and Defense Multiplier become zero and they also receive double damage from physical attacks. Vulnerable states include becoming Toad, Mini, and immediately after executing a 'Buildup' command until just prior to a subsequent 'Fight' or 'Overload'. In addition, if ANY character in the party chooses the 'Run' or 'Escape' command, then ALL party members become vulnerable for the entire round.

In the case Buildup, Toad or Mini, the character's Magic Defense also becomes zero and they will also receive double damage from magic attacks. They will not, however, receive double healing from White magic. Also, in the case of Toad and Mini, the character's Magic Defense Multiplier will also become zero.

ATTACKER: The one that is initiating an action command. An action command can be either 'Fight', 'Magic', 'Item', 'Jump', 'Sing'. In the damage calculation formulas, the stats Attack Damage, Attack Multiplier, Hit%, Magic Attack Damage, Magic Hit%, Magic Attack Multiplier all refer to the attacker's stats.

TARGET: The target of the attacker's action command. Most actions allow the attacker to choose a target. Some allow the attacker to attack all targets. Some will automatically target all enemies or all allies. In the damage calculation formulas, the stats Defense, Defense Multiplier, Evade%, Magic Defense, Magic Defense Multiplier, Magic Evade% all refer to the target's stats.

VII. DAMAGE CALCULATION FORMULA: BRIEF GENERAL FORMULA

The damage calculation formula is essentially the same regardless of what type of attack is made or who the attacker or target is. The following is a very brief overview of how damage is calculated from an attack. For magic attacks, use the appropriate magic stats.

NOTATION AND ABBREVIATIONS

(x..y) Refers to a uniformly distributed random number between x and y inclusive.

M Net Attack Multiplier

DAMAGE CALCULATION STEPS

1) CALCULATE BASE DAMAGE

Base Damage = Attack Damage

2) APPLY BASE DAMAGE BONUSSES AND PENALTIES

Base Damage = (Base Damage + (additive bonuses)) * (multiplicative bonuses or penalties)

3) APPLY RANDOM RANGE TO BASE DAMAGE

Base Damage = (Base Damage..Base Damage*1.5)

4) SUBTRACT TARGET'S DEFENSE

Base Damage = Base Damage - Defense

5) CALCULATE NET ATTACK MULTIPLIER

M (on average) \sim ((Attack Multiplier) * Hit%) - ((Defense Multiplier) * Evade%)

6) MULTIPLY BASE DAMAGE BY NET ATTACK MULTIPLIER

Final Damage = Base Damage * M

7) APPLY FINAL DAMAGE BONUSSES AND PENALTIES

Final Damage = Final Damage * (bonuses or penalties)

8) DUAL WIELDING OR MULTIPLE TARGETS

Repeat Steps 1-7 for each weapon in each hand.

Repeat Steps 1-7 for each target.

VIII. DAMAGE CALCULATION FORMULA: BONUSSES AND PENALTIES REFERENCE

For easy reference, here is a list of commands, spells etc. and a summary of their effects in the damage calculation formula.

1) COMMANDS

1.1) DEFEND

Immediately after a character executes a 'Defend' command, he will receive a bonus against physical attacks. This bonus only lasts until the end of the current round.

Defense = Defense * 4

This bonus is applied in Step 4.

1.2) TERRAIN

A Geomancer's 'Terrain' commands are considered Black Magic. The same formulas that pertain to Black Magic are also used for Terrain, namely:

Magic Damage = (Spell Damage) + (Intellect/2)

Magic Hit% = (Spell Hit%) + (Intellect/2)

Magic Attack Multiplier = (Intellect/16) + (Level/16) + 1

One important difference, though, is that if the Geomancer misses all targets (i.e. M (calculated from Step 5) = 0 for ALL targets) then instead of an 'Ineffective' message, you get a 'Backfired' message. The Geomancer also subsequently sustains $(MAX\ HP)/4$ damage.

1.3) JUMP

If a Dragoon is landing an attack from a 'Jump' command:

$$\text{Final Damage} = \text{Final Damage} * 3$$

This bonus is applied in Step 7.

1.4) BUILDUP

The Karateka's 'Buildup' command has three basic effects: a bonus to Final Damage, a penalty to the Karateka's Defense, Defense Multiplier and Magic Defense, and finally, the Karateka receives double damage (but not double healing) whenever he is the target of a physical or magic attack.

If a Karateka has executed one 'Buildup' command prior to the current attack, then:

$$\text{Final Damage} = \text{Final Damage} * 2$$

If a Karateka has executed two 'Buildup' commands prior to the current attack, then:

$$\text{Final Damage} = \text{Final Damage} * 3$$

Note that immediately after a Karateka executes a third 'Buildup' command without a 'Fight' command, then an 'Overload' occurs and the current attack is aborted and $HP = (Current\ HP)/2$

These bonuses are applied in Step 7.

Immediately after a Karateka has executed a 'Buildup' command and just prior to a subsequent 'Fight' or 'Overload', becomes vulnerable and has the following penalties:

$$\text{Defense} = 0$$
$$\text{Defense Multiplier} = 0$$

In addition the Karateka receives a penalty to his Magic Defense:

$$\text{Magic Defense} = 0$$

These penalties are applied in Steps 4 and 5.

Also during this period, whenever the Karateka is the target of a physical or magic attack, that attacker receives a bonus to Base Damage. Non-offensive White magic spells (i.e. healing), however, do not receive this bonus:

$$\text{Base Damage} = \text{Base Damage} * 2 \text{ (not for non-offensive White magic)}$$

This bonus is applied in Step 2 for the one attacking the Karateka.

1.5) SCARE

Each use the Bard's 'Scare' command reduces all enemies' levels:

$$\text{Enemy level} = \text{Enemy level} - 3$$

Multiple uses of 'Scare' can eventually lead to enemies running away instead of attacking in battle. An enemy will only run away if:

$(\text{Lowest character level}) - (\text{Enemy level}) > 15$

If the above condition is met, then the chance that a monster will choose to Run will be:

$\% \text{Chance to Run} = 100 - \text{Monster Hit}\%$

Also note that as an enemy level is decreased there is also the potential of reducing its Magic Attack Multiplier.

Bosses are immune to 'Scare' and will also never attempt to Run.

1.6) CHEER

Each use of the Bard's 'Cheer' command gives an additive bonus to physical Base Damage for each party member:

$\text{Base Damage} = \text{Base Damage} + 10$ (for physical attacks only)

This bonus is applied in Step 2.

1.7) RUN AND ESCAPE

If a character chooses the 'Run' or 'Escape' command, then for that entire round, ALL party members will be in a vulnerable state and receive the following defensive penalties:

Defense = 0

Defense Multiplier = 0

These penalties are applied in Steps 4 and 5.

Anyone attacking any of the party members will also receive a bonus to Base Damage for physical attacks:

$\text{Base Damage} = \text{Base Damage} * 2$ (for physical attacks only)

This bonus is applied in Step 2 for the one attacking the party member.

Note that monsters that attempt to Run receive NO penalties and party members that attack monsters that attempt to Run receive no bonuses.

1.8) ITEM

Using an item is essentially the same as casting the spell that is associated with that item. The damage calculation formula is same for items as it is for magic attacks. There are, however, two important differences:

i) Items have their own Magic Attack Multiplier. This is not influenced by any of the attacker's stats.

ii) Items have their Magic Hit% of 100. This is also not influenced by any of the attacker's stats, nor is it affected by Blind.

In general, all weapons that can be used to cast spells have a Magic Attack Multiplier of one. Most other items have a Magic Attack Multiplier of three.

2) SPELLS

2.1) HASTE

Although Haste doesn't appear to cause or heal any damage, it does have a Spell Damage value. When someone casts Haste, apply Steps 1-6 to calculate M and Final Damage for Haste. The target of the Haste spell then receives a bonus to his Attack Multiplier and Base Damage:

Base Damage = Base Damage + (Final Damage calculated from Haste)

A.M = A.M. + (M calculated from Haste)

The Base Damage bonus is applied in Step 2 for the Hasted target.

The Attack Multiplier is applied in Step 5 for the Hasted target.

Note that the maximum value for Base Damage is 255 and the maximum value for A.M. is 16. If the target already has a maximum value in either Base Damage or A.M., then the Haste spell becomes 'Ineffective'.

2.2) SAFE

Although Safe doesn't appear to cause or heal any damage, it does have a Spell Damage value. When someone casts Safe, apply Steps 1-6 to calculate Final Damage for Safe. The target of the Safe spell then receives a bonus to his Defense and Magic Defense:

Defense = Defense + (Final Damage calculated from Safe)

Magic Defense = Magic Defense + (Final Damage calculated from Safe)

These bonuses are applied in Step 4 for the Safe target.

Note that the maximum value for Defense or Magic Defense is 255. If the target already has a maximum value in either Defense or Magic Defense, then the Safe spell becomes 'Ineffective'.

2.3) KILL

The Kill spell follows the normal Magic Hit% formulas like all other spells, but with one major difference. The Kill spell will not work at all against targets whose levels are too high, relative to the caster.

IF Target Level \geq (((Attacker Level)/2)*3)/2

Magic Hit% = 0

This penalty is applied in Step 5

2.4) CURE4

If Cure4 is cast on a single target, that target fully heals his HP. If Cure4 is cast on multiple targets, use Steps 1-8 normally to calculate the amount cured.

2.5) TOAD, MINI, LIFE, LIFE2

When these spells are cast on a party member, their Magic Hit% is 100. If they are cast on an enemy, use the normal Magic Hit% formula.

2.6) OFFENSIVE AND NON-OFFENSIVE WHITE SPELLS

Offensive and non-offensive White spells have different formulas for Magic Damage:

Offensive White spells:

White Magic Attack Damage = (Spell Damage) + (Spirit/2)

Non-offensive White spells:

White Magic Attack Damage = (Spell Damage)

Offensive White spells include Holy, Aero2 and Aero. Non-offensive White spells include Cure4, Cure3, Cure2, Haste and Safe.

Note that the non-offensive formula still applies to the Cure spells, even if they are used to inflict damage against the undead.

2.7) AUTO-TARGETTING SPELLS

Normally, when you choose to cast a spell against multiple targets, Final Damage receives a penalty:

$$\text{Final Damage} = (\text{Final Damage}) / (\# \text{ of targets selected})$$

This penalty is applied in Step 7.

Some spells however, will automatically target all enemies or all allies. These spells do not receive the above penalty. Spells that automatically target all enemies include Quake, Meteo, some Terrain spells and all Call spells cast by a Summoner or Sage. Enemy magic that automatically targets all party members include Flame, Blizzard, Thunder, Tsunami, Flarewave, Atom Edge, Poison, Mindblast and Megaflare.

2.8) WALL

A successful casting of Wall on a target creates a barrier in front of that target. The next time an enemy targets that character with a magic attack, the spell is redirected back to an enemy party member. For damage calculation purposes, the formulas, bonuses and penalties are the same as if the caster had self-targeted himself or his party member with that spell. After reflecting one spell, the effects of Wall cease. Only one Wall may be in effect for one character at a time. Multiple castings of Wall on the same target have no effect. Wall does not reflect spells that were cast by their own party member (i.e. you may still heal someone with Wall). Only certain Black, White and Enemy magic spells may be reflected (see Magic Data).

2.9) WWIND

A successful casting of WWind on a target reduces that target's HP to (Spell Damage..Spell Damage * 2). Note that in this case, Final Damage in Step 6 is not used and M from Step 5 is used only to check for spell success.

3) ELEMENTAL EFFECTS

3.1) ELEMENTAL WEAKNESS

Note that for attacks with multiple elements, as long as the target is weak against at least one of those elements, then the target will be considered weak. If the target is weak against the attacking element, then:

$$\text{Base Damage} = \text{Base Damage} * 2$$

This bonus is applied in Step 2.

3.2) ELEMENTAL STRENGTH

Note that for attacks with multiple elements, as long as the target is strong against at least one of those elements and is not weak against any of those elements, then the target will be considered strong. If the target is strong against the attacking element, then:

$$\text{Base Damage} = \text{Base Damage} / 2$$

This bonus is applied in Step 2.

4) STATUS EFFECTS

4.1) BLIND

An attacker that is 'Blind' receives a penalty to his Hit% and Magic Hit%. Note that Item Magic Hit% is not affected by Blind.

$$\text{Hit\%} = (\text{Hit\%}/2)$$

$$\text{Magic Hit\%} = (\text{Magic Hit\%}/2)$$

These penalties are applied in Step 5.

4.2) TOAD AND MINI

If a character that is Toad or Mini makes a physical attack:

$$\text{Base Damage} = 0 \text{ (for physical attacks only)}$$

This penalty is applied in Step 2. This penalty supersedes every other bonus in Step 2 (i.e. a Hasted or Cheered Toad still only does 1 damage). The other bonuses are still recorded and in the event that the character recovers from Toad or Mini, he will be restored to the new improved Base Damage.

A Toad or Mini character is in a vulnerable state. Whenever a Toad or Mini character is the target of an attack:

$$\text{Defense} = 0$$

$$\text{Defense Multiplier} = 0$$

In addition, a Toad or Mini character also has a penalty to Magic Defense and Magic Defense Multiplier:

$$\text{Magic Defense} = 0$$

$$\text{Magic Defense Multiplier} = 0$$

These penalties are applied in Steps 4 and 5.

The one attacking the Toad or Mini character also receives a bonus to Base Damage. Non-offensive White magic spells (i.e. healing), however, do not receive this bonus:

$$\text{Base Damage} = \text{Base Damage} * 2 \text{ (not for non-offensive White magic)}$$

This bonus is applied in Step 2 for the one attacking the Toad or Mini character.

4.3) BACK ROW

OK, not exactly a status effect, but it is a state of being. Anyway, an attacker that makes a physical attack to or from the back row receives a penalty to Hit%:

$$\text{Hit\%} = (\text{Hit\%}/2)$$

This penalty is applied in Step 5.

MINIMUM DAMAGE

As long as you connect with at least one hit (i.e. $M > 0$ in Step 5), then the Final Damage will always be at least one.

IF ($M > 0$) and (Final Damage ≤ 0)
Final Damage = 1

This is applied in Step 7.

SELF-TARGETTING

If you target your own party member with a physical attack then that target receives penalty to its Defense:

Defense = 0

This penalty is applied in Step 4.

If you target your own party member with a magic attack, then that target receives the following penalties:

Magic Defense = 0
Magic Defense Multiplier = 0

These penalties are applied in Step 4.

IX. DAMAGE CALCULATION FORMULA: CHARACTER PHYSICAL ATTACKS

The following are detailed steps for calculating damage when a character uses a physical attack. These steps are all cumulative, calculated in the following order:

1) CALCULATE BASE DAMAGE

Base Damage = Weapon Base + (Strength/4) + (Skill/4)

2) APPLY BASE DAMAGE BONUSSES AND PENALTIES

2.1) BASE DAMAGE ADDITIVE BONUSSES

2.1.1) HASTE SPELL

Attackers that have had Haste cast on them get an additive bonus for physical attacks. This bonus is equal to the calculated Final Damage from the caster's Haste spell (via Steps 1-6).

Base Damage = Base Damage + (Final Damage calculated from Haste)

2.1.2) CHEER COMMAND

Each use of the Bard's 'Cheer' command gives an additive bonus to physical Base Damage for each party member:

Base Damage = Base Damage + 10

2.2) BASE DAMAGE MULTIPLICATIVE BONUSES

2.2.1) ELEMENTAL WEAKNESS

Note that for attacks with multiple elements, as long as the target is weak against at least one of those elements, then the target will be considered weak. If the target is weak against the attacking element, then:

Base Damage = Base Damage * 2

2.2.2) VULNERABLE TARGET

Vulnerable states include being a Frog, Mini, immediately after executing a 'Buildup' command and just prior to a subsequent 'Fight' or 'Overload', and also during the entire round when the target or any of its party members attempt to Run or Escape. If the target of the attack is in a vulnerable state:

Base Damage = Base Damage * 2

Note the above vulnerable conditions can only apply to party members. This bonus is only applied to a character that targets his own party member that is vulnerable.

2.3) BASE DAMAGE MULTIPLICATIVE PENALTIES

2.3.1) ELEMENTAL STRENGTH

Note that for attacks with multiple elements, as long as the target is strong against at least one of those elements and is not weak against any of those elements, then the target will be considered strong. If the target is strong against the attacking element, then:

Base Damage = Base Damage / 2

2.3.2) TOAD OR MINI

If the attacker is Toad or Mini then:

Base Damage = 0

Note that this penalty supersedes every other bonus list above. However, bonuses are still remembered and in the event that the target recovers from Toad or Mini status, he will be restored to the new, higher Base Damage value.

3) APPLY RANDOM RANGE TO BASE DAMAGE

Apply a random range to the Base Damage:

Base Damage = (Base Damage..Base Damage*1.5)

4) SUBTRACT TARGET'S DEFENSE

The target's defense value will reduce the Base Damage of the attack.

4.1) INITIAL DEFENSE VALUE

4.1.1) MONSTER DEFENSE

Against physical attacks, Monsters have their own Defense stat (referenced via

a lookup table):

Defense = Monster Defense

4.1.2) SELF-TARGETTING

If the attacker is targeting a party member:

Defense = 0

4.2) DEFENSE BONUSES

4.2.1) SAFE SPELL

Targets that have had Safe cast on them get an additive bonus. This bonus is equal to the calculated Final Damage from the caster's Safe spell (via Steps 1-6).

Defense = Defense + (Final Damage calculated from Safe)

4.3) BASE DAMAGE CALCULATION

Subtract the target's Defense value from the attacker's base Damage:

Base Damage = Base Damage - Defense

5) CALCULATE NET ATTACK MULTIPLIER

A.M. = Attack Multiplier

D.M. = Defense Multiplier

M = Net Attack Multiplier

5.1) ATTACK MULTIPLIER

5.1.1) INITIAL VALUE OF ATTACK MULTIPLIER

A.M. = (Agility/16) + (Level/16) + 1

5.1.2) ATTACK MULTIPLIER BONUSES

5.1.2.1) HASTE SPELL

Attackers that have had Haste cast on them get an additive bonus for physical attacks. This bonus is equal to the calculated Net Multiplier from the caster's Haste spell (via Step 5). Note that A.M. has a maximum value of 16. If Haste is cast on a target that already has an A.M. of 16, then the spell will be ineffective (the target will NOT receive a damage bonus).

A.M. = A.M. + (M calculated from Haste)

5.2) HIT%

5.2.1) INITIAL VALUE OF HIT%

Note that Hit% has a maximum value of 99. This maximum limit is applied BEFORE applying any Hit% penalties.

Hit% = Weapons Base Hit% + (Agility/4) + (Skill/4)

5.2.2) HIT% PENALTIES

5.2.2.1) BACK ROW

For physical attacks, if attacking to or from the back row:

Hit% = Hit%/2

5.2.2.2) BLIND STATUS

If the attacker is Blind:

Hit% = Hit%/2

5.3) DEFENSE MULTIPLIER

5.3.1) INITIAL VALUE OF DEFENSE MULTIPLIER

5.3.1.1) MONSTER DEFENSE MULTIPLIER

Against physical attacks, Monsters have their own Defense Multiplier stat (referenced via a lookup table):

D.M. = Monster Defense Multiplier

5.3.1.2) SELF-TARGETTING

If the attacker is targeting a party member, then if the target is equipped with a shield:

D.M. = (Agility/16) + (Level/16) + 1 * (number of shields equipped)

If the party member target is not equipped with a shield:

D.M. = (Agility/32) + (Level/32)

5.3.2) DEFENSE MULTIPLIER PENALTIES

5.3.2.1) VULNERABLE TARGET

If the character is physically attacking their own party member who is in a vulnerable state:

D.M. = 0

5.4) EVADE%

5.4.1) INITIAL VALUES OF EVADE%

5.4.1.1) MONSTER EVADE%

Against physical attacks, Monsters have their own Evade% (referenced via a lookup table):

Evade% = Monster Evade%

5.4.1.1) SELF-TARGETTING

If the attacker is targeting a party member:

Evade% = Sum of all worn (Armour Evade%) + (Agility/4)

5.5) NET ATTACK MULTIPLIER CALCULATION

The following is just a theory, but it does fit with observed testing:

M = 0

FOR I = 1..A.M.

IF (1..100) <= Hit%

M = M + 1

FOR I = 1..D.M.

IF (1..100) <= Evade%

M = M - 1

M is Net Attack Multiplier. If M <= 0 then the attack is a 'Miss'.

6) MULTIPLY BASE DAMAGE BY NET ATTACK MULTIPLIER

Using Base Damage calculated from Steps 1-4, and Net Attack Multiplier (M) from Step 5:

Final Damage = Base Damage * M

7) APPLY FINAL DAMAGE BONUSSES AND PENALTIES

7.1) FINAL DAMAGE BONUSSES

7.1.1) BUILDUP COMMAND

If a Karateka has executed one 'Buildup' command prior to the current attack, then:

Final Damage = Final Damage * 2

If a Karateka has executed two 'Buildup' commands prior to the current attack, then:

Final Damage = Final Damage * 3

Note that immediately after a Karateka executes a third 'Buildup' command without a 'Fight' command, then an 'Overload' occurs and the current attack is aborted and HP = (Current HP)/2

7.1.2) JUMP COMMAND

If a Dragoon is landing an attack from a 'Jump' command:

Final Damage = Final Damage * 3

7.2) MINIMUM DAMAGE

As long as M > 0, then Final Damage is always at least one:

IF (M > 0) and (Final Damage <= 0)

Final Damage = 1

7.3) STATUS ATTACKS

If the attacker's physical attack has a Status effect, then:

N = 0

FOR I = 1..M

IF (1..100) <= (Hit%-Evade%)

N = N + 1

The status will be inflicted on the target as long as N > 0.

8) DUAL WIELDING

If the attacker is wielding two weapons, apply Steps 1-7 for each hand. Final Damage is the sum from each hand and the number of hits shown on screen is the sum of the Net Attack Multipliers from each hand:

Final Damage = Final Damage (from Right Hand) + Final Damage (from Left Hand)

M (displayed on screen) = M (from Right Hand) + M (from Left Hand)

X. DAMAGE CALCULATION FORMULA: MONSTER PHYSICAL ATTACKS

The following are detailed steps for calculating damage when a monster uses a physical attack. These steps are all cumulative, calculated in the following order:

1) CALCULATE BASE DAMAGE

Monsters have their own Attack Damage (referenced via a lookup table):

Base Damage = Monster Attack Damage

2) APPLY BASE DAMAGE BONUSSES AND PENALTIES

2.1) BASE DAMAGE ADDITIVE BONUSSES

2.1.1) HASTE SPELL

Attackers that have had Haste cast on them get an additive bonus for physical attacks. This bonus is equal to the calculated Final Damage from the caster's Haste spell (via Steps 1-6).

Base Damage = Base Damage + (Final Damage calculated from Haste)

2.2) BASE DAMAGE MULTIPLICATIVE BONUSSES

2.2.1) ELEMENTAL WEAKNESS

Note that for attacks with multiple elements, as long as the target is weak against at least one of those elements, then the target will be considered weak. If the target is weak against the attacking element, then:

Base Damage = Base Damage * 2

2.2.2) VULNERABLE TARGET

Vulnerable states include being a Frog, Mini, immediately after executing a 'Buildup' command and just prior to a subsequent 'Fight' or 'Overload', and also during the entire round when the target or any of its party members attempt to Run or Escape. If the target of the attack is in a vulnerable state:

Base Damage = Base Damage * 2

2.3) BASE DAMAGE MULTIPLICATIVE PENALTIES

2.3.1) ELEMENTAL STRENGTH

Note that for attacks with multiple elements, as long as the target is strong against at least one of those elements and is not weak against any of those elements, then the target will be considered strong. If the target is strong against the attacking element, then:

Base Damage = Base Damage / 2

3) APPLY RANDOM RANGE TO BASE DAMAGE

Apply a random range to the Base Damage:

Base Damage = (Base Damage..Base Damage*1.5)

4) SUBTRACT TARGET'S DEFENSE

The target's defense value will reduce the Base Damage of the attack.

4.1) INITIAL DEFENSE VALUE

4.1.1) CHARACTER DEFENSE

Defense = Sum of all worn (Armour Defense) + (Vitality/2)

4.2) DEFENSE BONUSES

4.2.1) SAFE SPELL

Targets that have had Safe cast on them get an additive bonus. This bonus is equal to the calculated Final Damage from the caster's Safe spell (via Steps 1-6).

Defense = Defense + (Final Damage calculated from Safe)

4.2.2) DEFEND COMMAND

Immediately after a target executes a 'Defend' command, he will receive a bonus against physical attacks. This bonus only lasts until the end of the current round.

Defense = Defense * 4

4.3) DEFENSE PENALTIES

4.3.1) VULNERABLE TARGET

If the target of the attack is in a vulnerable state:

Defense = 0

4.4) BASE DAMAGE CALCULATION

Subtract the target's Defense value from the attacker's base Damage:

Base Damage = Base Damage - Defense

5) CALCULATE NET ATTACK MULTIPLIER

A.M. = Attack Multiplier

D.M. = Defense Multiplier
M = Net Attack Multiplier

5.1) ATTACK MULTIPLIER

5.1.1) INITIAL VALUE OF ATTACK MULTIPLIER

Monsters have their own Attack Multiplier (referenced via a lookup table):

A.M. = Monster Attack Multiplier

5.1.2) ATTACK MULTIPLIER BONUSES

5.1.2.1) HASTE SPELL

Attackers that have had Haste cast on them get an additive bonus for physical attacks. This bonus is equal to the calculated Net Multiplier from the caster's Haste spell (via Step 5). Note that A.M. has a maximum value of 16. If Haste is cast on a target that already has an A.M. of 16, then the spell will be ineffective (the target will NOT receive a damage bonus).

A.M. = A.M. + (M calculated from Haste)

5.2) HIT%

5.2.1) INITIAL VALUE OF HIT%

Monsters have their own Hit% (referenced via a lookup table):

Hit% = Monster Hit%

5.2.2) HIT% PENALTIES

5.2.2.1) BACK ROW

For physical attacks, if attacking to or from the back row:

Hit% = Hit%/2

5.2.2.2) BLIND STATUS

If the attacker is Blind:

Hit% = Hit%/2

5.3) DEFENSE MULTIPLIER

5.3.1) INITIAL VALUE OF DEFENSE MULTIPLIER

5.3.1.1) CHARACTER DEFENSE MULTIPLIER

If the target is equipped with a shield:

D.M. = (Agility/16) + (Level/16) + 1 * (number of shields equipped)

If the target is not equipped with a shield:

D.M. = (Agility/32) + (Level/32)

5.3.2) DEFENSE MULTIPLIER PENALTIES

5.3.2.1) VULNERABLE TARGET

If the target of a physical attack is in a vulnerable state:

D.M. = 0

5.4) EVADE%

5.4.1) INITIAL VALUES OF EVADE%

5.4.1.1) CHARACTER EVADE%

Evade% = Sum of all worn (Armour Evade%) + (Agility/4)

5.5) NET ATTACK MULTIPLIER CALCULATION

The following is just a theory, but it does fit with observed testing:

```
M = 0
FOR I = 1..A.M.
IF (1..100) <= Hit%
M = M + 1

FOR I = 1..D.M.
IF (1..100) <= Evade%
M = M - 1
```

M is Net Attack Multiplier. If M <= 0 then the attack is a 'Miss'.

```
*****
6) MULTIPLY BASE DAMAGE BY NET ATTACK MULTIPLIER
*****
```

Using Base Damage calculated from Steps 1-4, and Net Attack Multiplier (M) from Step 5:

Final Damage = Base Damage * M

```
*****
7) APPLY FINAL DAMAGE BONUSSES AND PENALTIES
*****
```

7.1) MINIMUM DAMAGE

As long as M > 0, then Final Damage is always at least one:

```
IF (M > 0) and (Final Damage <= 0)
Final Damage = 1
```

7.2) STATUS ATTACKS

If the attacker's physical attack has a Status effect, then:

```
N = 0
FOR I = 1..M
IF (1..100) <= (Hit%-Evade%)
N = N + 1
```

The status will be inflicted on the target as long as N > 0.

XI. DAMAGE CALCULATION FORMULA: MAGIC ATTACKS & ITEMS

Monsters cast spells or use special attacks similar to the way characters cast spells. The damage calculation formula is essentially same in either case. Also, a character that uses an item is essentially casting the spell that is

associated with that item and again the damage calculation formula is similar. Two important differences with items are:

- i) Items have their own Magic Attack Multiplier. This is not influenced by any of the attacker's stats.
- ii) Items have their Magic Hit% of 100. This is also not influenced by any of the attacker's stats, nor is it affected by Blind.

Finally, the Geomancer's 'Terrain' command is essentially the same as casting Black Magic, without using MP.

The following are detailed steps for calculating damage when a magic attack is made. These steps are all cumulative, calculated in the following order:

1) CALCULATE BASE DAMAGE

1.1) BLACK MAGIC DAMAGE

Note that Black Magic also includes the Terrain command from the Geomancer.

Base Damage = Spell Damage + (Intellect/2)

1.2) WHITE MAGIC DAMAGE

For offensive White magic (Holy, Aero2, Aero):

Base Damage = Spell Damage + (Spirit/2)

For non-offensive White magic (Cure4, Cure3, Cure2, Cure, Haste, Safe):

Base Damage = Spell Damage

1.3) CALL MAGIC DAMAGE

For Call Magic:

Base Damage = Spell Damage + Intellect

2) APPLY BASE DAMAGE BONUSSES AND PENALTIES

2.1) BASE DAMAGE MULTIPLICATIVE BONUSSES

2.1.1) ELEMENTAL WEAKNESS

Note that for attacks with multiple elements, as long as the target is weak against at least one of those elements, then the target will be considered weak. If the target is weak against the attacking element, then:

Base Damage = Base Damage * 2

2.1.2) TARGETS THAT ARE TOAD, MINI OR BUILDUP

If the target is a Frog, Mini or has executed a 'Buildup' command and not executed a subsequent 'Fight' or 'Overload', the attacker gets a bonus to Base Damage. Note this does NOT apply for non-offensive White magic:

Base Damage = Base Damage * 2 (not for non-offensive White magic)

2.2) BASE DAMAGE MULTIPLICATIVE PENALTIES

2.2.1) ELEMENTAL STRENGTH

Note that for attacks with multiple elements, as long as the target is strong against at least one of those elements and is not weak against any of those elements, then the target will be considered strong. If the target is strong against the attacking element, then:

Base Damage = Base Damage / 2

3) APPLY RANDOM RANGE TO BASE DAMAGE

Apply a random range to the Base Damage:

Base Damage = (Base Damage..Base Damage*1.5)

4) SUBTRACT TARGET'S DEFENSE

The target's magic defense value will reduce the Base Damage of the attack.

4.1) INITIAL DEFENSE VALUE

4.1.1) CHARACTER MAGIC DEFENSE

Defense = Sum of all (Armour Base Magic Defense) worn

4.1.2) MONSTER MAGIC DEFENSE

Against magic attacks, Monsters have their own Magic Defense stat (referenced via a lookup table):

Defense = Monster Magic Defense

4.1.3) SELF-TARGETTING

If the attacker is targeting his own party member:

Defense = 0

4.2) DEFENSE BONUSES

4.2.1) SAFE SPELL

Targets that have had Safe cast on them get an additive bonus. This bonus is equal to the calculated Final Damage from the caster's Safe spell (via Steps 1-6).

Defense = Defense + (Final Damage calculated from Safe)

4.3) DEFENSE PENALTIES

4.3.1) TARGETS THAT ARE TOAD, MINI OR BUILDUP

If the target is a Frog, Mini or has executed a 'Buildup' command and not executed a subsequent 'Fight' or 'Overload', the target gets a penalty to Defense:

Defense = 0

4.4) BASE DAMAGE CALCULATION

Subtract the target's Defense value from the attacker's base Damage:

Base Damage = Base Damage - Defense

5) CALCULATE NET ATTACK MULTIPLIER

A.M. = Attack Multiplier
D.M. = Defense Multiplier
M = Net Attack Multiplier

5.1) ATTACK MULTIPLIER

5.1.1) BLACK MAGIC ATTACK MULTIPLIER

Note that Black Magic also includes the Terrain command from the Geomancer.

A.M. = (Intellect/16) + (Level/16) + (Skill/32) + 1

5.1.2) WHITE MAGIC ATTACK MULTIPLIER

For White magic:

A.M. = (Spirit/16) + (Level/16) + (Skill/32) + 1

5.1.3) CALL MAGIC ATTACK MULTIPLIER

For Call magic:

A.M. = (Intellect/8) + (((Skill/8)*3)/2) + 1

5.1.4) ITEM ATTACK MULTIPLIER

Items have their own attack multiplier that is not influenced by any of the character's stats.

A.M. = Item Attack Multiplier

5.2) HIT%

5.2.1) INITIAL VALUE OF HIT%

5.2.1.1) BLACK SPELL HIT%

Note that Black Magic also includes the Terrain command from the Geomancer.

Hit% = Spell Hit% + (Intellect/2)

5.2.1.2) WHITE SPELL HIT%

For White magic:

Hit% = Spell Hit% + (Spirit/2)

5.2.1.3) CALL SPELL HIT%

For Call Magic:

Hit% = Spell Hit% + Intellect

5.2.1.4) ITEM HIT%

All items have a Hit% of 100 that is not influenced by any of the character's stats.

Hit% = 100 (for items only)

5.2.2) HIT% BONUSES

5.2.2.1) TOAD OR MINI ON PARTY MEMBERS

Toad, Mini, Life and Life2 appear to have a Hit% of 100 when cast on party members:

Hit% = 100 (for Toad, Mini, Life and Life2 cast on party members)

5.2.3) HIT% PENALTIES

5.2.3.1) BLIND STATUS

Note that being Blind does not affect the Hit% of items. If the attacker is Blind:

Hit% = Hit%/2 (not for items)

5.2.3.2) KILL SPELL

The success rate of the Kill spell also depends on the relative levels between the target and caster:

IF Target Level \geq (((Attacker Level)/2)*3)/2)

Hit% = 0

5.3) DEFENSE MULTIPLIER

5.3.1) INITIAL VALUE OF DEFENSE MULTIPLIER

5.3.1.1) CHARACTER MAGIC DEFENSE MULTIPLIER

D.M. = (Agility/32) + (Intellect/32) + (Spirit/32)

5.3.1.2) MONSTER MAGIC DEFENSE MULTIPLIER

Against magic attacks, Monsters have their own Base Magic Defense Multiplier (referenced via a lookup table):

D.M. = Monster Base Magic Defense Multiplier

5.3.2) DEFENSE MULTIPLIER PENALTIES

5.3.2.1) TOAD OR MINI

If the target of a magic attack is a Toad or Mini:

D.M. = 0

5.3.2.2) SELF-TARGETTING

If the attacker is targeting a party member with magic, then:

D.M. = 0

5.4) EVADE%

5.4.1) INITIAL VALUES OF EVADE%

5.4.1.1) CHARACTER MAGIC EVADE%

Magic Evade% = (Intellect/2) + (Spirit/2)

5.4.1.2) MONSTER MAGIC EVADE%

Against magic attacks, Monsters have their own Magic Evade% (referenced via a lookup table):

Evade% = Monster Magic Evade%

5.5) NET ATTACK MULTIPLIER CALCULATION

The following is just a theory, but it does fit with observed testing:

```
M = 0
FOR I = 1..A.M.
IF (1..100) <= Hit%
M = M + 1

FOR I = 1..D.M.
IF (1..100) <= Evade%
M = M - 1
```

M is Net Attack Multiplier. If M <= 0 then the attack is 'Ineffective'. For the 'Terrain' command, if M <= 0 against ALL targets, instead of 'Ineffective', then 'Backfired' occurs. The attacker subsequently also sustains (MAX HP)/4 damage.

6) MULTIPLY BASE DAMAGE BY NET ATTACK MULTIPLIER

Using Base Damage calculated from Steps 1-4, and Net Attack Multiplier (M) from Step 5:

$$\text{Final Damage} = \text{Base Damage} * M$$

7) APPLY FINAL DAMAGE BONUSSES AND PENALTIES

7.1) FINAL DAMAGE BONUSSES

7.1.1) CURE4

If Cure4 is cast on a single target, that target heals to full HP. If Cure4 is cast on multiple targets, follow all Steps in Damage Calculation normally.

7.2) FINAL DAMAGE PENALTIES

7.2.1) MULTIPLE TARGETS

If the attacker has selected multiple targets instead of single target, then:

$$\text{Final Damage} = (\text{Final Damage}) / (\text{number of targets selected})$$

Note this does NOT apply to spells that automatically targets multiple targets (Quake, Meteo, Call Spells)

7.3) MINIMUM DAMAGE

As long as M > 0, then Final Damage is always at least one:

```
IF (M > 0) and (Final Damage <= 0)
Final Damage = 1
```

7.4) STATUS ATTACKS

If the attacking spell has a Status effect, then the status will be inflicted on the target as long as M > 0.

8) MULTIPLE TARGETS

If the attacker is attacking multiple targets, repeat Steps 1-7 for each target.

XII. DATA

These are my own data tables I've compiled from the FF3j rom hex data. Special thanks goes again to sqpat17 for finding and posting the hex offset data which let me find the data in the first place.

Abbreviations:

DAMAGE: Any letters that precede damage indicate an attack element:

F	Fire	E	Earth
I	Ice	A	Air
T	Thunder	Dr	Drain
H	Holy	D	Dark

Petr(1/2) Slow Petrify. Requires two successful, separate attacks to Petrify
Petr(1/3) Slow Petrify. Requires three successful, separate attacks to Petrify

Str	Strength	Agl	Agility
Vit	Vitality	Int	Intellect
Spr	Spirit		

F Mag Fire Magic Power Up
B Mag Bolt Magic Power Up
I Mag Ice Magic Power Up

On	Onion Kid	Fi	Fighter
Mo	Monk	Ww	White Wizard
Bw	Black Wizard	Rw	Red Wizard
Hu	Hunter	Kn	Knight
Th	Thief	Sc	Scholar
Ge	Geomancer	Dr	Dragoon
Vi	Viking	Ka	Karateka
Mk	Mystic Knight	Co	Conjurer
Ba	Bard	Wa	Warlock
Sh	Shaman	Su	Summoner
Sa	Sage	Ni	Ninja

-Mk refers to all classes except the Mystic Knight

WEAPON DATA

FISTS+CLAWS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Empty	1	80%		0	All
Kaiser	36	100%		7000	Ka Ni
CatClaw	42	100%		14000	Ka Ni
Dragon	F,T:48	100%		18000	Ka Ni
Elven	37	100%	Casts 'Confu'	18000	Ka Ni

HellClaw D:60 100% Adds Poison 40000 Ka Ni

NUNCHUCKS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Nunchuck	12	70%		60	Mo Ni
Tonfa	20	80%		500	Mo Ni
3-Part	25	70%		3000	Mo Ni

RODS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Mithril	5	60%		400	Ww Bw Rw Co Wa Sh Su Sa Ni
Flame	F:12	70%	F Mag Up	3000	Bw Rw Co Wa Su Sa Ni
Ice	I:12	70%	I Mag Up	3000	Bw Rw Co Wa Su Sa Ni
Light	T:12	60%	B Mag Up	3000	Bw Rw Co Wa Su Sa Ni
Ultimate	H,E,A, F,I,T:20	80%	Adds Petr(1/2)	30000	Wa Sa Ni

STAVES

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Staff	3	50%		40	Ww Rw Sh Sa Ni
Burning	8	50%	Casts 'Fire'	3500	Ww Rw Sh Sa Ni
Freezing	8	50%	Casts 'Ice'	3500	Ww Rw Sh Sa Ni
Shining	8	50%	Casts 'Bolt'	3500	Ww Rw Sh Sa Ni
Golem	E:16	70%	Casts 'Break', Str+5, Adds Petr(1/3)	13500	Ww Rw Sh Sa Ni
Rune	20	80%	Casts 'Ice 3'	18000	Ww Rw Sh Sa Ni
Eldest	30	90%	Casts 'Cure', Int+5, Spr+5, F Mag Up, I Mag Up, B Mag Up,	65000	Sh Sa Ni

AXES AND HAMMERS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Hammer	T:25	60%		500	Vi Ni
Thor	T:30	70%	Casts 'Bolt2'	14000	Vi Ni
Battle	T:45	60%		5500	Vi Ni
M.Star	T:50	70%		8000	Vi Ni
Tomahawk	60	80%		20000	Vi Ni
GreatAxe	T:75	80%		14000	Vi Ni
Triton	A:85	80%		20000	Vi Ni

SPEARS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Thunder	A,T:35	80%	Casts 'Bolt2'	8000	Dr Ni
Wind	A:50	80%	Casts 'Aero'	10000	Dr Ni
Blood	A,Dr:70	80%		20000	Dr Ni
Holy	H,A:100	80%		45000	Dr Ni

KNIVES

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Knife	6	85%		20	On Fi Bw Rw Kn Th Ni
Dagger	8	85%		60	On Fi Bw Rw Kn Th Ni
Mithril	10	85%		500	On Fi Bw Rw Kn Th Ni
M.Gauche	30	100%		7000	Th Ni
Orialcon	Dr:45	100%		1200	Th Ni
AirKnife	A:60	100%	Casts 'Aero'	10000	Th Ni

SWORDS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Shiny	5	20%		5000	Fi Kn Ni
Long	10	80%		100	On Fi Kn Ni
W.Slayer	H:15	80%		1000	Rw Ni
Mithril	17	85%		500	On Fi Kn Ni
Serpent	T:25	80%		1500	Fi Kn Ni
Tyrving	29	75%		2800	Rw Ni
Salamand	F:32	80%	Casts 'Fire'	3000	Fi Kn Ni
IceBlade	I:40	80%	Casts 'Ice'	3000	Fi Kn Ni
King	50	80%		5000	Fi Kn Ni
Ancient	H:5	80%	Adds Paralysis	16500	Fi Kn Ni
Blood	Dr:35	80%		16500	Fi Kn Ni
Defender	95	80%	Casts 'Safe', Vit+5	16500	Kn Ni
Break	E:120	80%	Adds Petr(1/2)	30000	Kn Ni
Excalibur	160	80%	Str+5	65000	Kn Ni
Ragnarok	D:180	100%	Str+5, Agl+5, Vit+5	65500	Kn Mk Ni
Onion	200	100%	Str+5, Agl+5, Vit+5	65500	On

KATANAS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Ashura	D:65	100%		20000	Mk Ni
Kotetsu	D:105	90%		21000	Mk Ni
Kiku	D:125	100%		22000	Mk Ni
Masamune	D:160	90%	Agl+5, Vit+5	65000	Mk Ni

BOOKS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Flame	F:32	70%		3300	Sc Sa Ni
Ice	I:32	70%		3300	Sc Sa Ni
Light	T:32	70%		3300	Sc Sa Ni
Inferno	F:65	70%		15000	Sc Sa Ni
Illumina	T:65	80%		15000	Sc Sa Ni
Blizzard	I:65	80%		15000	Sc Sa Ni

THROWING WEAPONS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Boomerng	35	70%		9000	Th Ni
FullMoon	160	90%		62000	Kn Mk Ni
Shuriken	200	100%		65500	Ni

BELLS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Giyaman	25	80%		4500	Ge Ni
Earth	30	80%	Adds Paralysis	5500	Ge Ni
Rune	40	100%		5500	Ge Ni

HARPS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Madora	40	70%		8000	Ba Ni
Dream	0	60%	Adds Sleep	7500	Ba Ni
Lamia	0	80%	Adds Confusion	21500	Ba Ni
Loki	60	100%		40000	Ba Ni

BOWS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Bow	5	90%		100	On Fi Rw Hu Ni
GreatBow	8	85%		1200	On Fi Rw Hu Ni

Killer	15	85%		2000	Hu Ni
Rune	25	90%		3000	Hu Ni
Yoichi	50	100%		42000	Hu Ni

ARROWS

WEAPON	DAMAGE	HIT%	NOTES	PRICE	JOB EQUIPPABLE
Wooden	6	90%		5	On Fi Rw Hu Ni
Holy	H:13	85%		10	On Fi Rw Hu Ni
Iron	17	85%		10	On Fi Rw Hu Ni
Bolt	T:30	85%		30	Hu Ni
Fire	F:30	90%		30	Hu Ni
Ice	I:30	90%		30	Hu Ni
Medusa	E:20	100%	Adds Petrified	100	Hu Ni
Yoichi	70	100%		200	Hu Ni

ARMOUR DATA

DEF: Any letters that precede defense indicate element resistance.

SHIELDS

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Leather	3	3%	2		40	On Fi Rw Kn Th Dr Vi Ni
Mithril	5	7%	7		180	On Fi Rw Kn Th Dr Vi Ni
Ice	F:8	9%	8	Weak:I	1800	On Fi Rw Kn Th Dr Vi Ni
Hero	10	10%	12	Resist Petr, Sleep	3500	Kn Dr Vi Ni
Demon	12	14%	18	Resist Frog, Conf	12500	Mk Ni
Diamond	T:13	14%	15	Resist Frog, Conf	18000	Kn Dr Vi Ni
Aegis	16	16%	25	Resist Petr, Sleep, Frog, Conf, Agl+5	28000	Kn Dr Vi Ni
Genji	20	18%	35	Resist Petr, Sleep, Frog, Conf, Poison, Str+5, Agl+5	38000	Mk Ni
Crystal	20	20%	30	Resist Petr, Sleep, Frog, Conf, Mini, Parlyz, Str+5, Agl+5, Vit+5	50000	On Fi Rw Kn Dr Vi Mk Ni
Onion	48	48%	48	Resist Dead, Parlyz, Petr, Sleep, Frog, Conf, Mute, Mini, Blind, Poison	65500	On

HEADGEAR

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Leather	1	1%	1		15	-Mk
Mithril	2	4%	4		130	On Fi Rw Kn Th Dr Vi Ni
Carapace	3	5%	5		450	On Fi Kn Dr Vi Ni
Ice	F:4	6%	6	Weak:I	1200	Fi Rw Hu Kn Th Dr Vi Ni
Headband	4	6%	4		1200	Mo Ka Ni

Scholar	5	10%	6		7500	Ww Bw Sc Wa Sh Sa Ni
DarkHood	5	8%	5	Str+5	2000	Th Ni
Chakra	6	10%	6	Str+5, Vit+5	2000	Mo Ka Ni
Viking	7	10%	7		3000	Vi Ni
Dragon	7	10%	7		8000	Dr Ni
Feather	7	10%	8	Agl+5	8000	Hu Sc Ge Co Ba Wa Sh Su Sa Ni
Diamond	T:8	12%	9	Resist Frog, Conf	20000	Kn Dr Vi Ni
Genji	10	15%	11	Resist Petr, Sleep, Frog, Conf, Poison	32000	Mk Ni
Crystal	12	15%	15	Resist Petr, Sleep, Frog, Conf, Mini, Parlyz	50000	On Fi Rw Kn Dr Vi Mk Ni
Ribbon	E,A, F,I, Dr:9	10%	10	Resist Dead, Parlyz, Petr, Sleep, Frog, Conf, Mute, Mini, Blind, Poison	10	All
Onion	E,A, F,I, Dr:48	48%	48	Resist Dead, Parlyz, Petr, Sleep, Frog, Conf, Mute, Mini, Blind, Poison	65500	On

BODY ARMOUR

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Rusted	0	0%	0		100	None
Leather	2	1%	1		95	-Mk
Mithril	3	3%	3		350	On Fi Rw Hu Kn Dr Vi Ni
Carapace	4	4%	4		1250	Fi Hu Kn Dr Vi Ni
Ice	F:5	6%	4	Weak:I	2400	Fi Hu Kn Dr Vi Ni
FlameMail	I:5	6%	4	Weak:F	2400	Fi Hu Kn Dr Vi Ni
Viking	10	8%	7		4000	Vi Ni
Knight	12	9%	7	Resist Petr, Sleep	7500	Kn Ni
Dragon	15	10%	7		8000	Dr Ni
Demon	17	15%	9	Resist Frog, Conf	25000	Mk Ni
Diamond	T:18	10%	10	Resist Frog, Conf	33000	Kn Dr Vi Ni
Reflect	20	12%	12		35000	Kn Dr Vi Ni
Genji	24	20%	15	Resist Petr, Sleep, Frog, Conf, Poison	40000	Mk Ni
Crystal	28	20%	18	Resist Petr, Sleep, Frog, Conf, Mini, Parlyz	65000	On Fi Rw Kn Dr Vi Mk Ni
Onion	E,A, F,I, Dr:48	48%	48	Resist Dead, Parlyz, Petr, Sleep, Frog, Conf, Mute, Mini, Blind, Poison	65500	On

ROBES

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Cloth	1	0%	0		50	-Mk
Kenpo	6	8%	3		2000	Mo Ka Ni
DarkSuit	8	70%	5	Agl+5	3800	Th Ni
Wizard	9	7%	7		2000	Ww Bw Rw Co Wa Sh Su Sa Ni
BlackBelt	11	10%	5	Agl+5	3800	Mo Ka Ni
Bard	15	12%	7		5500	Ba Ni
Scholar	15	12%	7		5500	Ww Bw Sc Wa Sh Sa Ni
Gaia	16	12%	8		4200	Ge Ni
WhiteRobe	20	12%	14	Spr+5	7000	Ww Rw Co Sh Su Sa Ni
BlackRobe	20	12%	14	Int+5	7000	Bw Rw Co Wa Su Sa Ni

GLOVES

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Mithril	1	5%	2		120	On Fi Rw Kn Dr Vi Ni
Thief	3	9%	4	Str+5	2500	Th Ni
Gauntlet	2	8%	3		2500	Kn Dr Vi Ni
Diamond	T:6	10%	5	Resist Frog, Conf	15000	Kn Dr Vi Ni
Genji	9	15%	7	Resist Petr, Sleep, Frog, Conf, Poison	30000	Mk Ni
Crystal	10	15%	10	Resist Petr, Sleep, Frog, Conf, Mini, Parlyz	50000	On Fi Rw Kn Dr Vi Mk Ni
Onion	E,A, F,I, Dr:32	32%	32	Resist Dead, Parlyz, Petr, Sleep, Frog, Conf, Mute, Mini, Blind, Poison, Str+5, Agl+5, Vit+5	65500	On

RINGS

ARMOUR	DEF	EV%	M.DEF	NOTES	PRICE	JOB EQUIPPABLE
Copper	1	2%	3		80	Ww Bw Rw Sc Ge Co Wa Sh Su Sa Ni
Mithril	2	7%	3		120	Ww Bw Rw Sc Ge Co Wa Sh Su Sa Ni
Power	4	11%	1	Str+5	2500	Fi Mo Rw Hu Kn Th Sc Ge Dr Vi Ka Ba Ni
Rune	5	10%	6		5000	Ww Bw Rw Sc Ge Co Wa Sh Su Sa Ni
Diamond	T:6	12%	6	Resist Frog, Conf	10000	Ww Bw Rw Sc Ge Co Wa Sh Su Sa Ni
Protect	7	15%	7	Vit+5	30000	-Mk

SKILL DATA

Every time a command is entered in battle, that character will receive a certain amount of Percentile Points, depending on its Job and the command that was entered. Every 100 Percentile Points accumulated gives +1 to the character's current Job Skill. Percentile Points over 100 are discarded after the battle. Characters that are Dead or Petrified at the end of battle receive no Percentile Points. If the party successfully runs or escapes from

battle then no one receives any Percentile Points. The following is a list of all Jobs and the amount of Percentile Points (%PTS) earned for each command:

JOB	COMMAND	%PTS	COMMAND	%PTS	COMMAND	%PTS	COMMMAND	%PTS
Onion Kid	Fight	4	Defend	4	Run	4	Item	4
Fighter	Fight	12	Defend	8	Run	0	Item	8
Monk	Fight	12	Defend	8	Run	0	Item	8
White Wiz.	Fight	4	Magic	12	Run	0	Item	4
Black Wiz	Fight	4	Magic	12	Run	0	Item	4
Red Wiz.	Fight	8	Magic	12	Run	0	Item	4
Hunter	Fight	12	Defend	4	Magic	8	Item	4
Knight	Fight	12	Defend	8	Run	0	Item	4
Thief	Fight	8	Steal	12	Escape	4	Item	4
Scholar	Fight	12	Peep	12	Scan	12	Item	12
Geomancer	Fight	8	Terrain	12	Defend	4	Item	4
Dragoon	Fight	8	Jump	12	Defend	8	Item	4
Viking	Fight	12	Defend	8	Run	0	Item	8
Karateka	Fight	12	BuildUp	12	Defend	0	Item	4
M. Knight	Fight	12	Defend	4	Magic	8	Item	4
Conjurer	Fight	8	Magic	12	Run	0	Item	4
Bard	Sing	12	Scare	8	Cheer	12	Item	4
Warlock	Fight	4	Magic	12	Run	0	Item	4
Shaman	Fight	4	Magic	12	Run	0	Item	4
Summoner	Fight	8	Magic	12	Run	0	Item	4
Sage	Fight	4	Magic	12	Run	0	Item	4
Ninja	Fight	8	Defend	8	Run	4	Item	4

MAGIC DATA

DAMAGE: Any letters that precede damage indicate an attack element.

REF? refers to whether the spell can be reflected by Wall.

TAR: Refers to targeting parameters.

Targeting Abbreviations:

- E Single or Multiple targeting, default Enemy
- A Single or Multiple targeting, default Ally
- SE Single only, default Enemy
- SA Single only, default Ally
- AE Automatically targets all Enemies
- AA Automatically targets all Allies

BLACK MAGIC

SPELL	DAMAGE	HIT%	NOTES	REF?	TAR	LEV	PRICE	JOB	EQUIPPABLE
Fire	F:25	100%		Y	E	1	100	Bw Rw Wa Sa	
Ice	I:25	100%		Y	E	1	100	Bw Rw Wa Sa	
Sleep	0	15%	Adds Sleep	N	E	1	100	Bw Rw Wa Sa	
Bolt	T:35	100%		Y	E	2	700	Bw Rw Wa Sa	
Venom	20	60%	Adds Poison	Y	E	2	700	Bw Rw Wa Sa	
Blind	10	60%	Adds Blind	N	E	2	700	Bw Rw Wa Sa	
Fire2	F:55	100%		Y	E	3	1500	Bw Rw Wa Sa	
Ice 2	I:55	100%		Y	E	3	1500	Bw Rw Wa Sa	
Bolt2	T:55	100%		Y	E	3	1500	Bw Rw Wa Sa	
Break	E:0	50%	Adds Ptr (1/2)	Y	SE	4	3000	Bw Rw Wa Sa	

Ice 3	I:85	100%		Y	E	4	3000	Bw	Rw	Wa	Sa
Shade	0	80%	Adds Parlyz	N	E	4	3000	Bw	Rw	Wa	Sa
Bolt3	T:110	100%		Y	E	5	5000	Bw	Wa	Sa	
Kill	100	100%	Adds Dead	N	AE	5	5000	Bw	Wa	Sa	
Erase	0	60%	Removes Refl.	N	E	5	5000	Bw	Wa	Sa	
Fire3	F:150	100%		Y	E	6	10000	Bw	Wa	Sa	
Bio	130	100%		Y	E	6	10000	Bw	Wa	Sa	
Warp	0	0%	Adds Dead	N	SE	6	10000	Bw	Wa	Sa	
Quake	E:133	100%		N	AE	7	20000	Bw	Wa	Sa	
Brak2	E:0	40%	Adds Petr	N	SE	7	20000	Bw	Wa	Sa	
Drain	Dr:160	100%		N	SE	7	20000	Bw	Wa	Sa	
Flare	200	100%		Y	E	8	60000	Wa	Sa		
Death	0	35%	Adds Dead	N	SE	8	60000	Wa	Sa		
Meteo	180	100%		N	AE	8	60000	Wa	Sa		

WHITE MAGIC

SPELL	DAMAGE	HIT%	NOTES	REF?	TAR	LEV	PRICE	JOB	EQUIPPABLE			
Cure	Dr:42	100%		N	A	1	100	Ww	Rw	Hu	Mk	Sh
Sa												
Pure	0	50%	Cures Poison	N	SA	1	100	Ww	Rw	Hu	Mk	Sh
Sa												
Sight	0	100%		N	SE	1	100	Ww	Rw	Hu	Mk	Sh
Sa												
Aero	A,I:45	100%		Y	E	2	700	Ww	Rw	Sh	Sa	
Toad	0	0%	Adds Frog	N	SE	2	700	Ww	Rw	Hu	Mk	Sh
Sa												
Mini	0	0%	Adds Mini	N	SE	2	700	Ww	Rw	Hu	Mk	Sh
Sa												
Cure2	Dr:125	100%		N	A	3	1500	Ww	Rw	Hu	Mk	Sh
Sa												
Exit	0	0%	Adds Dead	N	SE	3	1500	Ww	Rw	Hu	Mk	Sh
Sa												
Wash	0	75%	Cures Blind	N	SA	3	1500	Ww	Rw	Hu	Mk	Sh
Sa												
Libra	0	100%	Scans HP	N	SE	4	3000	Ww	Rw	Sh	Sa	
Confu	0	25%	Adds Conf	N	E	4	3000	Ww	Rw	Sh	Sa	
Mute	0	60%	Adds Mute	N	E	4	3000	Ww	Rw	Sh	Sa	
Cure3	Dr:180	100%		N	A	5	5000	Ww	Sh	Sa		
Life	Dr:1	15%	Cures Dead	N	SA	5	5000	Ww	Sh	Sa		
Safe	5	75%		N	SA	5	5000	Ww	Sh	Sa		
Aero2	A,I:115	100%		Y	E	6	10000	Ww	Sh	Sa		
Soft	0	60%	Cures Petr	N	SA	6	10000	Ww	Sh	Sa		
Haste	5	16%		N	SA	6	10000	Ww	Sh	Sa		
Cure4	Dr:220	100%		N	A	7	20000	Ww	Sh	Sa		
Heal	0	60%	Cures All	N	SA	7	20000	Ww	Sh	Sa		
Wall	0	75%	Adds Reflect	N	SA	7	20000	Ww	Sh	Sa		
WWind	A:4	40%		N	E	8	60000	Sh	Sa			
Life2	Dr:255	0%	Cures Dead	N	SA	8	60000	Sh	Sa			
Holy	H:160	100%		Y	SE	8	60000	Sh	Sa			

CALL MAGIC

SPELL	DAMAGE	HIT%	NOTES	REF?	TAR	LEV	PRICE	JOB	EQUIPPABLE
Chocb						1	100	Co Su Sa	
Escape	0	100%		N	AA				
Stumble	0	100%		N	SE				
ChocoboKick	16	100%		N	SE				
Shiva						2	700	Co Su Sa	
HypnoBeam	0	80%	Adds Sleep	N	AE				
Icy Glare	53	100%		N	SE				
Diamond Dust	I:32	100%		N	AE				
Ramuh						3	1500	Co Su Sa	
MindBlast	0	70%	Adds Parlyz	N	AE				
God's Thunder	T:48	100%		N	SE				
Heaven's Rage	T:96	100%		N	AE				
Ifrit						4	3000	Co Su Sa	
Recover	Dr:90	100%		N	AA				
Flames of Fury	F:85	100%		N	SE				
Hellfire	F:128	100%		N	AE				
Titan						5	5000	Co Su Sa	
Punch	101	100%		N	SE				
Kick	106	100%		N	SE				
Earthquake	E:160	100%		N	AE				
Odin						6	45000	Co Su Sa	
Barrier	0	100%		N	AA				
Sword Cut	117	100%		N	SE				
Atom Edge	195	100%		N	AE				
Levia						7	55000	Co Su Sa	
Stony Glare	E:0	5%	Adds Petr	N	AE				
Tempest	A:133	100%		N	AE				
Tsunami	T:202	100%		N	AE				
Baham						8	65000	Co Su Sa	
Aura	0	100%		N	AA				
Rend	144	100%		N	SE				
MegaFlare	255	100%		N	AE				

TERRAIN

SPELL	DAMAGE	HIT%	NOTES	REF?	TAR
Earthquake	E:90	50%		N	AE
Quicksand	0	30%	Adds Dead	N	SE
Air Blade	A:120	30%		N	SE
Sinkhole	0	40%	Adds Dead	N	SE
Rapids	T:0	40%	Adds Dead	N	SE
Waterspout	A:120	60%		N	SE
Tornado	A:120	60%		N	SE
Cave In	E:120	40%		N	AE

ENEMY MAGIC

SPELL	DAMAGE	HIT%	NOTES	REF?	TAR
Recovery	Dr:30	100%		N	SA
EchoHerb	Dr:0	100%	Cures Mute	N	SA
LuckMallet	Dr:0	100%	Cures Mini	N	SA
MaidKiss	Dr:0	100%	Cures Frog	N	SA

Flame	F:40	100%		Y	AE
Blizzard	I:40	100%		Y	AE
Thunder	T:40	100%		Y	AE
Glare (Sleep)	0	80%	Adds Sleep	N	SE
Glare (Conf)	0	80%	Adds Confu	N	SE
Glare (Petr)	E:0	80%	Adds Petr	N	SE
Breath	0	60%	Adds Parlyz	N	SE
Mindblast	0	80%	Adds Parlyz	N	AE
Poison	0	80%	Adds Poison	Y	AE
Quake	E:80	100%		N	AE
Atom Edge	32	100%		N	AE
Tsunami	37	100%		N	AE
MegaFlare	80	100%		Y	AE
FlareWave	80	100%		N	AE

ITEM DATA

A.M. Refers to Item Attack Multiplier

ITEMS

ITEM	SPELL	A.M.	PRICE
Magic Key			100
Carrot			150
Potion	Recovery	3	150
HiPotion	Recovery	12	1200
Elixir	Elixir		3000
FenixDown	Life		3000
MidgBread	Sight		200
Soft	Soft		300
MaidKiss	MaidKiss		100
EchoHerb	EchoHerb		100
LuckMallet	LuckMallet		100
Eyedrop	Wash		40
Antidote	Pure		80
OtterHead	Exit (Menu only)		2000
BombShard	Fire2	2	1000
SouthWind	Ice2	2	1000
Zeus' Rage	Bolt2	2	1000
BombR.Arm	Fire3	3	1500
NorthWind	Ice3	3	1500
Gods' Rage	Bolt3	3	1500
EarthDrum	Quake	3	2500
LamiaScl.	Confu	3	3000
Gods' Wine	Haste	3	3000
TurtlShell	Safe	3	3000
Devil'sSigh	Kill	3	3000
BlackHole	Warp	3	4000
	(Battle only)		
DarkScent	Death	3	5000
LilithKiss	Drain	3	3000
Imp'sYawn	Aero2	3	3000
SplitShell	Erase	3	3000
Paralyzer	Shade	3	3000
MuteCharm	Mute	3	2000
Pillow	Sleep	3	2000
BombHead	Flare	3	2000
Barrier	Wall	3	5000
ChocoRage	Flare	3	5000
WhiteScent	Holy	3	5000

WEAPONS USUABLE AS ITEMS

CLAWS

ITEM	SPELL	A.M.
Dragon	Aero	1
Elven	Confu	1

STAVES

ITEM	SPELL	A.M.
Burning	Fire	1
Freezing	Ice	1
Shining	Bolt	1
Golem	Break	1
Rune	Ice 3	1
Eldest	Cure	1

HAMMERS

ITEM	SPELL	A.M.
Thor	Bolt2	1

SPEARS

ITEM	SPELL	A.M.
Thunder	Bolt2	1
Wind	Aero	1

KNIVES

ITEM	SPELL	A.M.
AirKnife	Aero	1

SWORDS

ITEM	SPELL	A.M.
IceBlade	Ice	1
Salamand	Fire	1
Defender	Safe	1

XIII. OTHER ISSUES

CRITICAL HITS

I don't know how to manipulate the critical hit rate of Weapons or Monsters, so it is very difficult to figure out where and how much criticals affect the damage calculation formula. Casual observation has shown it to sometimes be double damage, and other times to be indistinguishable from the normal damage range. The final damage shown is not always a multiple of 2, so if anything, the damage bonus would probably be applied in Step 1 somewhere.

STEAL RATE

Steal rate is much harder to derive a formula for since there appears to only be a single success rate% to check. With Magic Hit%, attack multipliers made it easier to distinguish the observed data. With only a single check and the sometimes erratic behaviour of the pseudo-random number generator, it's hard

to distinguish between a 66% success rate and a 75% success rate, or even a 25% success and 50% success, unless I do > 300 trials. What I CAN say for sure is that:

i) Steal rate only depends on Skill and Level (NOT Agility). Target's Level also doesn't seem to have any effect.

ii) At Level 99 and Skill 99, Steal Rate is not 100%. It appears to be ~ 75% but could be 66%.

Best guess for the Steal Rate formula would be either:

$$\text{Steal Rate}\% = (\text{Level}/3) + (\text{Skill}/3)$$

or

$$\text{Steal Rate}\% = (\text{Level}/2) + (\text{Skill}/4)$$

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