# Class SpellControl

## Function calcDamage

This function must calculate the damage caused by casting a spell.

The inputs are:

The character’s level

The character’s Charisma ability

The spell’s base damage

The spell’s damage per character level – random number from 1 to damage

The output to return is an integer that the program will then subtract from the target’s hit points.

Invalid cases include a Charisma score below 10, in which case the character could not cast a spell. The spell will fail and the algorithm will return -1. Character level 0 will also return -1.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Valid Input** | **Invalid Input** | | **Boundaries** | | | | | | | |
| Character Level | 6 | 0 | 6 | 1 | 20 | 10 | 10 | 10 | 10 | 10 | 10 |
| Charisma | 16 | 16 | 8 | 11 | 11 | 11 | 22 | 11 | 11 | 11 | 11 |
| Base Damage | 0 | 0 | 0 | 6 | 6 | 6 | 6 | 0 | 20 | 6 | 6 |
| Damage/Level | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 3 | 20 |
| Spell Damage | 24-54 | -1 | -1 | 7-12 | 26-126 | 16-66 | 76-126 | 10-60 | 30-80 | 16-36 | 16-206 |
| Test Case | Normal | Character level 0 | Charisma < 10 | Low Level | High Level | Low Charisma | High Charisma | Low Base Damage | High Base Damage | Low Damage per Level | High Damage per Level |

Algorithm

Rnd = rnd() \* [Spell.damagePerLevel] + 1.0

spellDamage = Character.level \* (Rnd + ((Character.abilities[5] – 10) / 2)) + Spell.baseDamage

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Valid Input** | **Invalid Input** | | **Boundaries** | | | | | | | |
| Character Level | 6 | 0 | 6 | 1 | 20 | 10 | 10 | 10 | 10 | 10 | 10 |
| Charisma | 16 | 16 | 8 | 11 | 11 | 11 | 22 | 11 | 11 | 11 | 11 |
| Base Damage | 0 | 0 | 0 | 6 | 6 | 6 | 6 | 0 | 20 | 6 | 6 |
| Damage/Level | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 3 | 20 |
| CHA modifier | 3 | 3 | -1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| Random | 5.023305836 | 9.02812716 | 4.313859 | 6.708336 | 4.107074 | 1.325632 | 10.49363 | 5.318952 | 6.087106 | 2.163866 | 4.479098 |
| Spell Damage | 30 | -1 | -1 | 12 | 88 | 19 | 110 | 53 | 80 | 27 | 50 |
| Test Case | Normal | Character level 0 | Charisma < 10 | Low Level | High Level | Low Charisma | High Charisma | Low Base Damage | High Base Damage | Low Damage per Level | High Damage per Level |