

Rewritten by MrTouchnGo of Bera, [SouthPerry](#), and [Basilmarket](#). Original proof was brought up and written by [Maninae](#).

Don't view this on IE because the formatting can screw up.

If you do not have a basic understanding of algebra (manipulating variables, multiplying polynomials), do not bother reading this.

Variables used:

D is the topside of your damage range.

D_1 is the topside of your damage range with +1 primary stat.

D_2 is the topside of your damage range with +1 ATK.

s is primary stat.

s_2 is secondary stat.

a is attack.

ATK/attack includes both Weapon ATK and Magic ATK.

Proof for classes with secondary stats.

Damage formula for classes with secondary stats {every class except Shadowers, Dual Blades, and Night Lords}:

$$D = [\text{multiplier} * \text{atk}/100 * (4 * \text{primary stat} + \text{secondary stat})]$$

Because the multiplier and 1/100 is multiplied with everything, we can take that out of the equation and not affect the final result. **This adjusted formula cannot be used to calculate your range.**

$$D = \text{atk} * (4 * \text{primary stat} + \text{secondary stat})$$

$$D = a(4s + s_2)$$

$$D = 4as + as_2$$

$$D_1 = a(4(s + 1) + s_2)$$

$$D_1 = a(4s + 4 + s_2)$$

$$D_1 = 4as + 4a + as_2$$

$$D_1 - D = 4a$$

$$D_2 = (a + 1)(4s + s_2)$$

$$D_2 = 4as + 4s + as_2 + s_2$$

$$D_2 - D = 4s + s_2$$

$$\frac{D_2 - D}{D_1 - D} = \frac{4s + s_2}{4a} \text{ (I apologize if you can't see that, but I can't enlarge the equation for some reason.)}$$

$$\frac{D_2 - D}{D_1 - D} = \frac{s + \frac{s_2}{4}}{a}$$

Final ratio is

$$[s + (s_2/4)]/a$$

or

$$[s + (s_2/4) + (s_3/4)]/a \text{ for classes with tertiary stat.}$$

According to this, the actual stat:atk ratio includes not only the **Primary stat**, but also the **Secondary stat**. The reason that most people ignore the secondary stat is because most of the time, you have such a small amount of secondary stat compared to primary stat (especially after it is divided by 4) that it is inconsequential to the ratio, which is somewhat inaccurate anyways because every time you add 1 stat, the ratio changes by a tiny amount.

So the ratio of stat:atk is posted to be s/a .

The ratio of secondary/tertiary stat:atk is $s_2/4a$ or $s_3/4a$.