$$DMG = ((ATK_{Base})(1 + ATK_{\%}) + ATK_{flat}) \times (1 + DMG_{Bonus}) \times (1 + (CR) * (CD)) \tag{1}$$

$$\{CR, CD\} \longleftrightarrow \{100\%, (CR)(CD)\} \tag{2}$$

$$f(x, y, z) = (1000 \times (1 + 0.466 + 0.058x) + 311) \times (1 + (0.361 + 0.039y) \times (0.5 + 0.078z)) \tag{3}$$

$$38 = x + y + z \tag{4}$$

1. Define g(x,y,z) by "moving" all terms of the constraint equation to one side. I.e. g(x,y,z) = x + y + z - 38
2. Define the Lagrangian function $\mathcal{L}(x, y, z, \lambda) = f(x, y, z) + \lambda g(x, y, z)$

   $\mathcal{L}(x, y, z, \lambda) = (1000 \times (1 + 0.466 + 0.058x) + 311) \times (1 + (0.361 + 0.039y) \times (0.5 + 0.078z)) + \lambda(x + y + z - 38)$
3. Calculate the gradient of the Lagrangian $\nabla\mathcal{L}(x, y, z, \lambda) = \left(\frac{\partial\mathcal{L}}{\partial x}, \frac{\partial\mathcal{L}}{\partial y}, \frac{\partial\mathcal{L}}{\partial z}, \frac{\partial\mathcal{L}}{\partial\lambda}\right)$

$$conten \tag{5}$$

4. Construct a system of equations by setting $\nabla\mathcal{L}(x, y, z, \lambda) = 0$

$$\frac{\partial\mathcal{L}}{\partial x} = 0 \qquad \frac{\partial\mathcal{L}}{\partial y} = 0 \qquad \frac{\partial\mathcal{L}}{\partial z} = 0 \qquad \frac{\partial\mathcal{L}}{\partial\lambda} = 0 \tag{6}$$