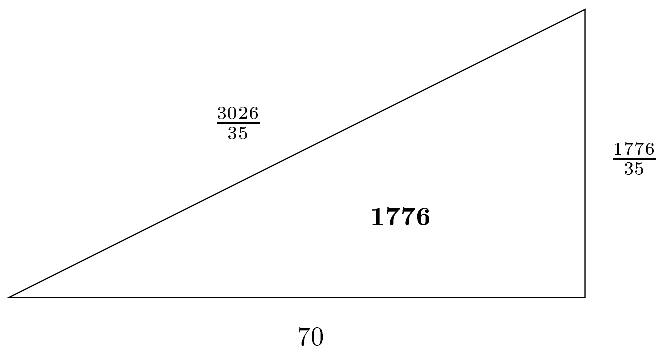
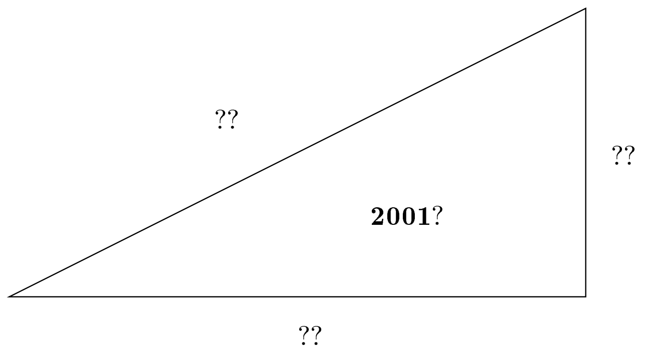


$y^2 = x^3 - 1776^2 x$ has the nontrivial solution $x = -576$, $y = 40320$.



$$y^2 = x^3 - n^2 x$$

$n = 5:$ $\quad y^2 = x^3 - 25x,$ $\quad$ solution: $x = -4, \quad y = 6$

$n = 6:$ $\quad y^2 = x^3 - 36x,$ $\quad$ solution: $x = -3, \quad y = 9$

$n = 1:$ $\quad y^2 = x^3 - x,$ $\quad$ no nontrivial solutions (Fermat)

$$\begin{aligned} &\#\{(a,b,c) : 2a^2 + b^2 + 8c^2 = n\} \\ &= 2 \cdot \#\{(a,b,c) : 2a^2 + b^2 + 32c^2 = n\} \end{aligned}$$