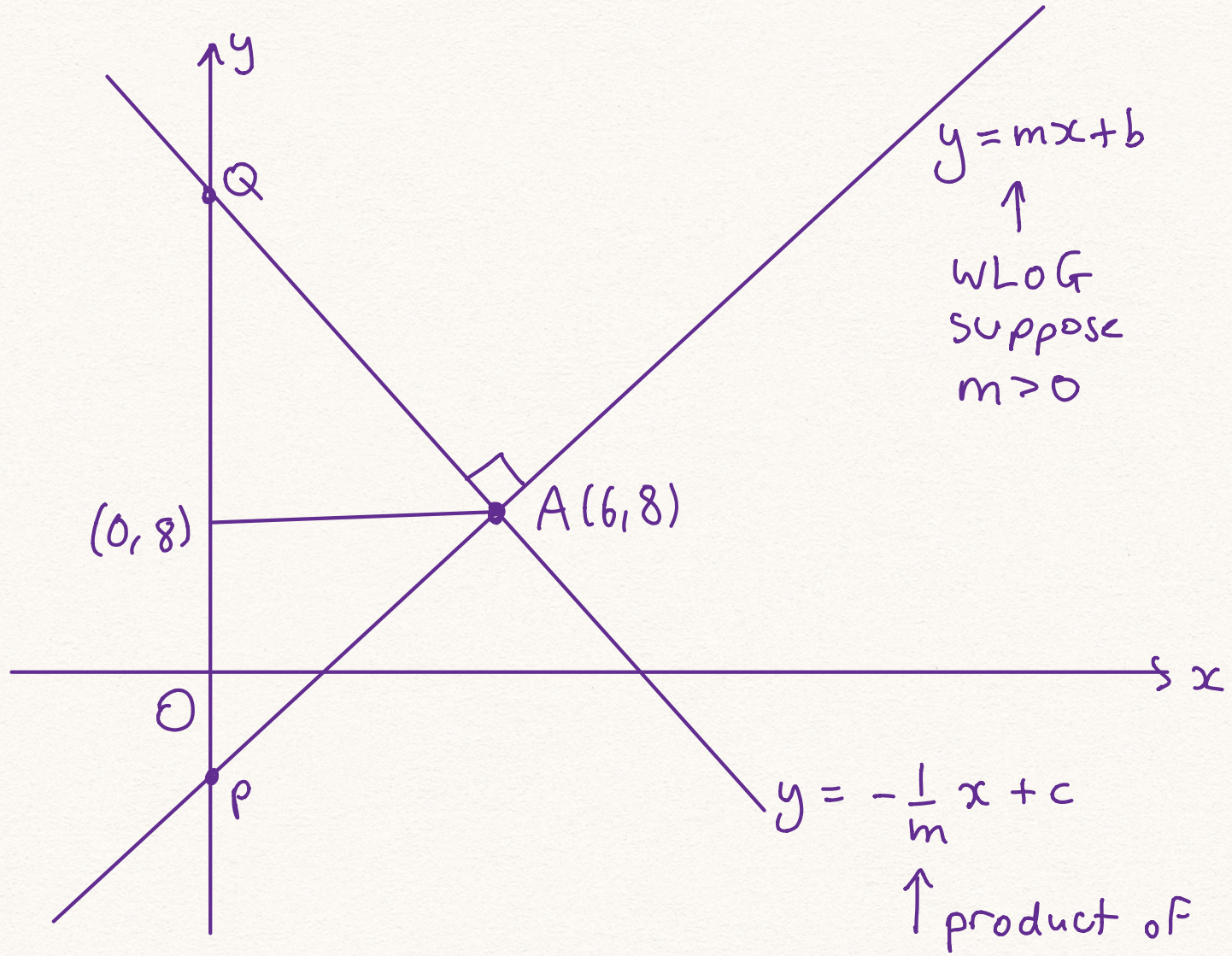
The y-intercepts, P and Q, of two perpendicular lines intersecting at the point A(6, 8) have a sum of zero. What is the area of the triangle $\triangle APQ$?



Know: $8 = 6m + b$

$8 = -\frac{6}{m} + c$] sub pt into line eqn

$b + c = 0$] given in question

So we have $b = -c$

$\Rightarrow \quad 8 = 6m - c$

$\Rightarrow \quad c = 6m - 8$

but also $c = 8 + \frac{6}{m}$

$\Rightarrow \quad 6m - 8 = 8 + \frac{6}{m}$

$\Rightarrow \quad 6m = 16 + \frac{6}{m}$

$\Rightarrow \quad 6m^2 = 16m + 6$

$\Rightarrow \quad 6m^2 - 16m - 6 = 0$

$\Rightarrow \quad 3m^2 - 8m - 3 = 0$

$\Rightarrow \quad m = \frac{8 \pm \sqrt{64 - 4 \times 3 \times (-3)}}{2 \times 3}$

$= \frac{8 \pm \sqrt{64 + 36}}{2 \times 3}$

$= \frac{8 \pm 10}{6}$

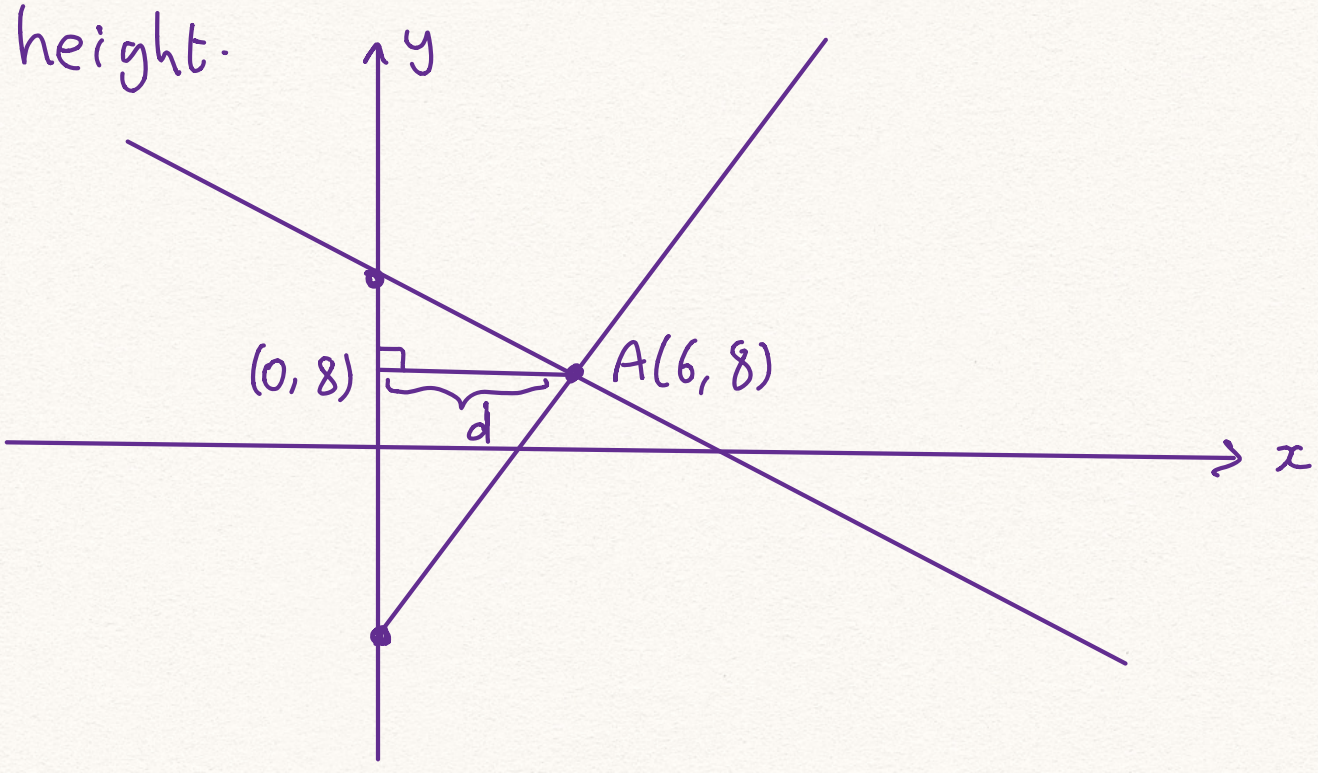
$= 3$ (since we assumed that $m > 0$)

So we have $c = 8 + \frac{6}{m} = 8 + 2 = 10$

$\Rightarrow b = -10$

Hence the length of the base of $\triangle APQ$ is $10 + 10 = 20$.

Now we need to find its perpendicular height.



The distance d is 6, given by the x-coordinate of A.

So the area of $\triangle APQ$ is

$$\frac{1}{2} \times \text{base} \times \text{height}$$

$$= \frac{1}{2} \times 20 \times 6$$

$$= \boxed{60 \text{ units}^2}$$