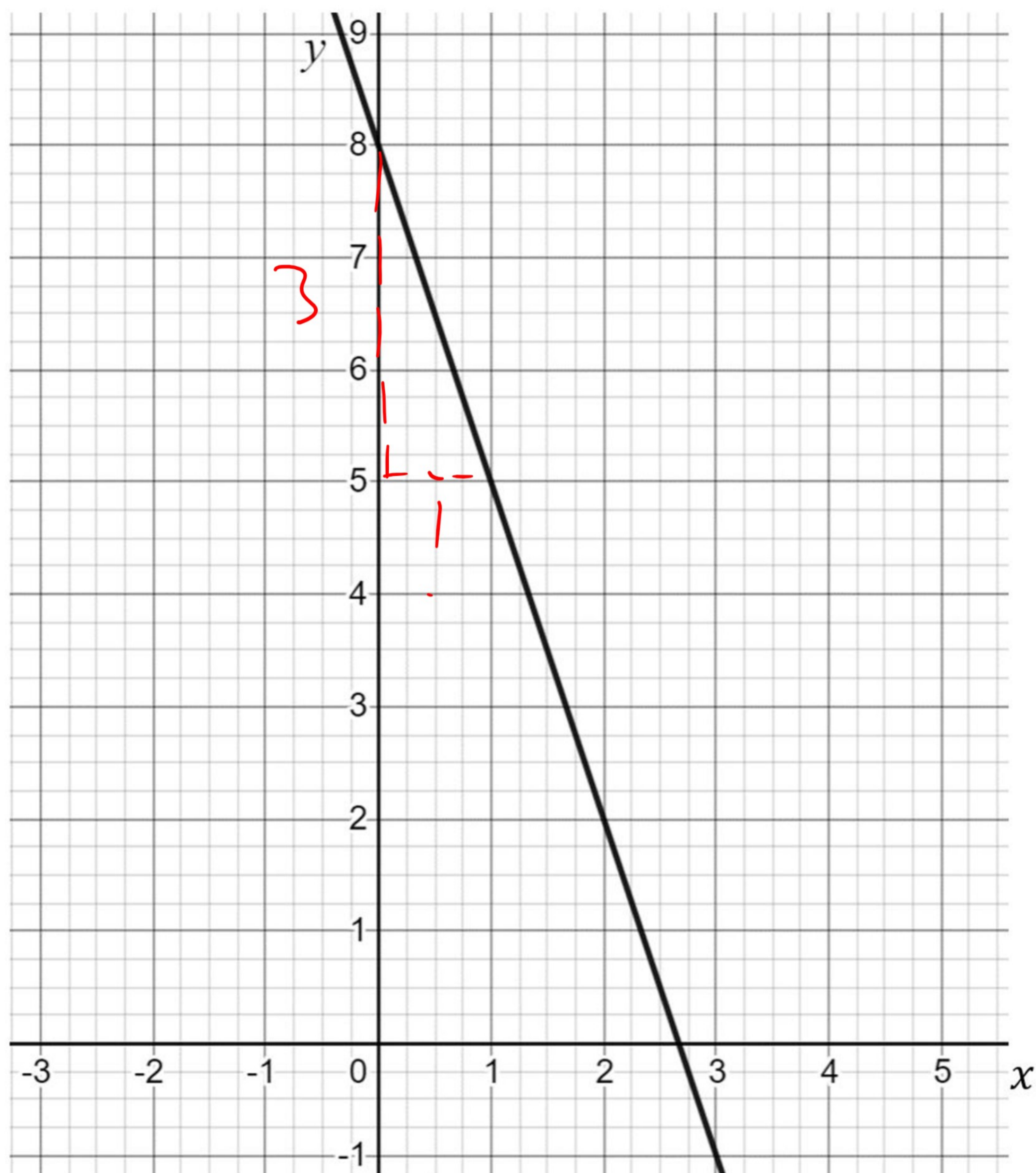




Gradient of a Straight Line Exam Practice

Q1. Find the gradient of the line:



$$-\frac{3}{1} = -3$$

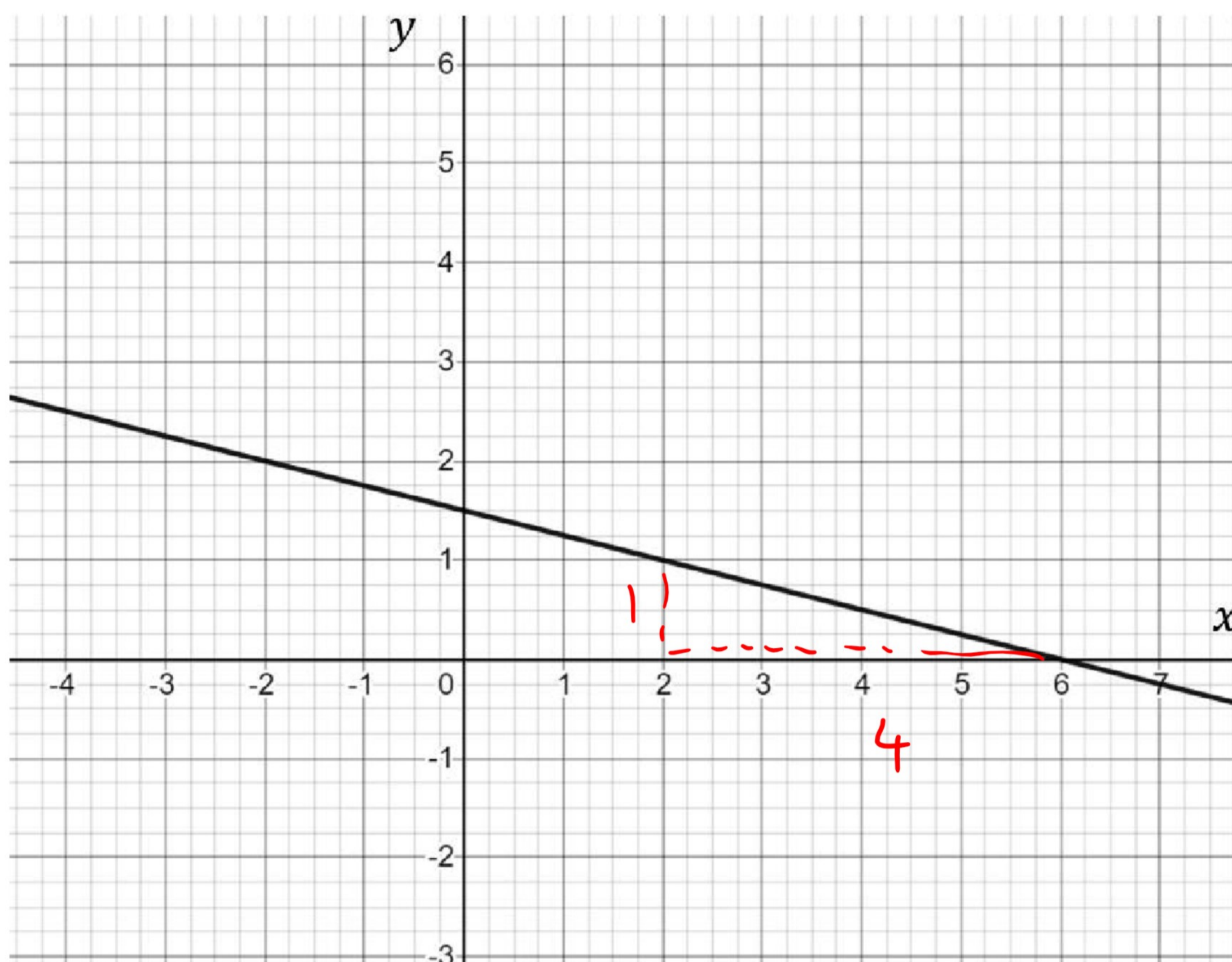
Answer: _____

-3

(1 mark)



Q2. a) Find the gradient of the line:



$$-\frac{1}{4}$$

Answer: $-\frac{1}{4}$
(1 mark)

b) Is the point (18,-3) on the line? Justify your answer.

• equation of line is $y = -\frac{1}{4}x + \frac{3}{2}$

• $-3 \stackrel{?}{=} -\frac{1}{4} \times 18 + \frac{3}{2}$

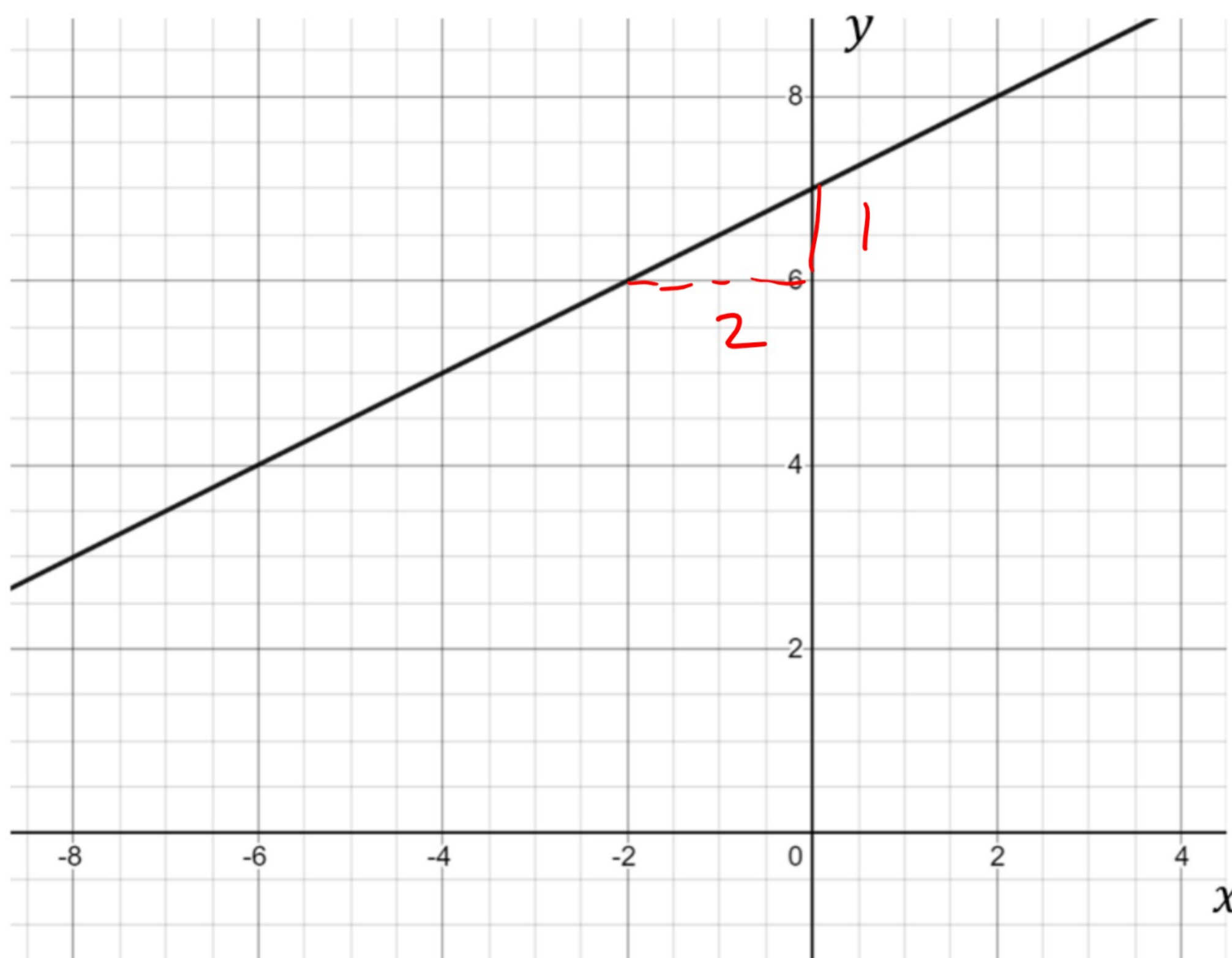
$-3 \stackrel{?}{=} -\frac{9}{2} + \frac{3}{2}$

$-3 = -\frac{6}{2}$ ✓

Answer: yes
(2 marks)



Q3. a) Find the gradient of the line:



Answer: $\frac{1}{2}$
(1 mark)

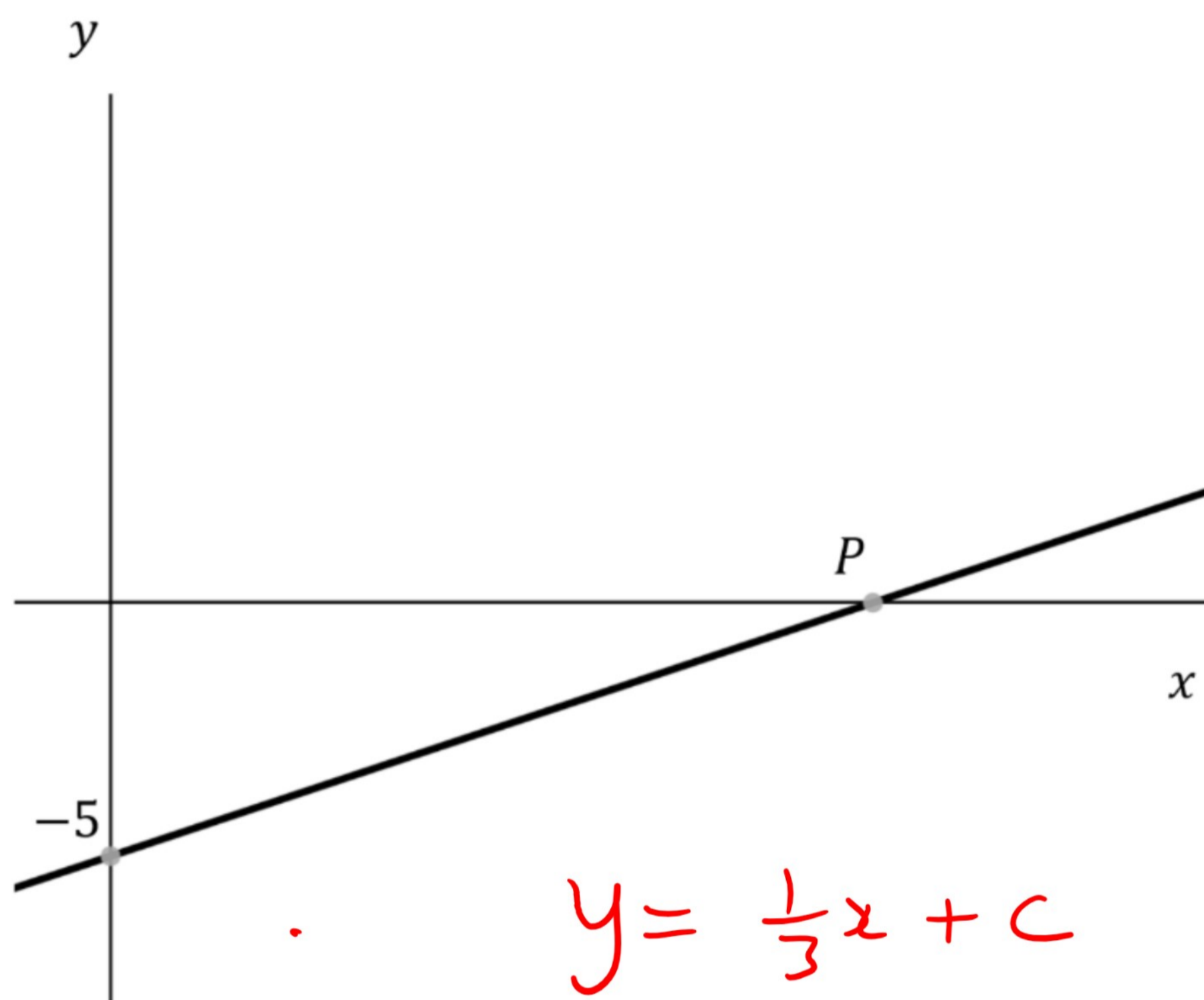
b) Is the point (10,14) on the line? Justify your answer.

equation is: $y = \frac{1}{2}x + 7$. subs. in $(10, 14)$
 $14 \stackrel{?}{=} \frac{1}{2}(10) + 7$
 $14 \neq 12$ so not on line

Answer: no
(2 marks)



Q4. The gradient of the line shown below is $\frac{1}{3}$. Work out the co-ordinates of the point P.



$$y = \frac{1}{3}x + c$$

subs in $(0, -5)$

$$\Rightarrow -5 = \frac{1}{3}(0) + c$$

$$\Rightarrow c = -5$$

equation is $y = \frac{1}{3}x - 5$

pts of the form $(x, 0)$

$$\Rightarrow 0 = \frac{1}{3}x - 5$$

$$x = 15$$

Answer: $(15, 0)$

(2 marks)



Q5. Work out the gradient of the line segment which has end-points A and B where A = (2, 5) and B = (6, -3)

$$\begin{aligned}m &= \frac{5 - -3}{2 - 6} \\ &= \frac{8}{-4} \\ &= -2\end{aligned}$$

Answer: -2
(2 marks)

Q6. A line passes through the points A = (-7, 2) and B = (8, -4). Work out the gradient of the line, giving your answer as a simplified fraction.

$$\begin{aligned}m &= \frac{2 - -4}{-7 - 8} \\ &= \frac{6}{-15} \\ &= -\frac{2}{5}\end{aligned}$$

Answer: $-\frac{2}{5}$
(2 marks)



Q7. The line CD passes through the points C = (-3, 4) and D = (k, 12).
The gradient of CD is 4. Work out the value of k.

$$\frac{12-4}{k-(-3)} = 4$$

$$\frac{8}{k+3} = 4$$

$$8 = 4k + 12$$

$$-4 = 4k$$

$$k = -1$$

Answer: -1
(2 marks)

Q8. The line AB passes through the points A(k, -9) and (4, 12). The
gradient of AB is $-\frac{2}{3}$. Work out the value of k.

$$\frac{12-(-9)}{4-k} = -\frac{2}{3}$$

$$\frac{21}{4-k} = -\frac{2}{3}$$

$$21(3) = -2(4-k)$$

$$63 = -8 + 2k$$

$$71 = 2k$$

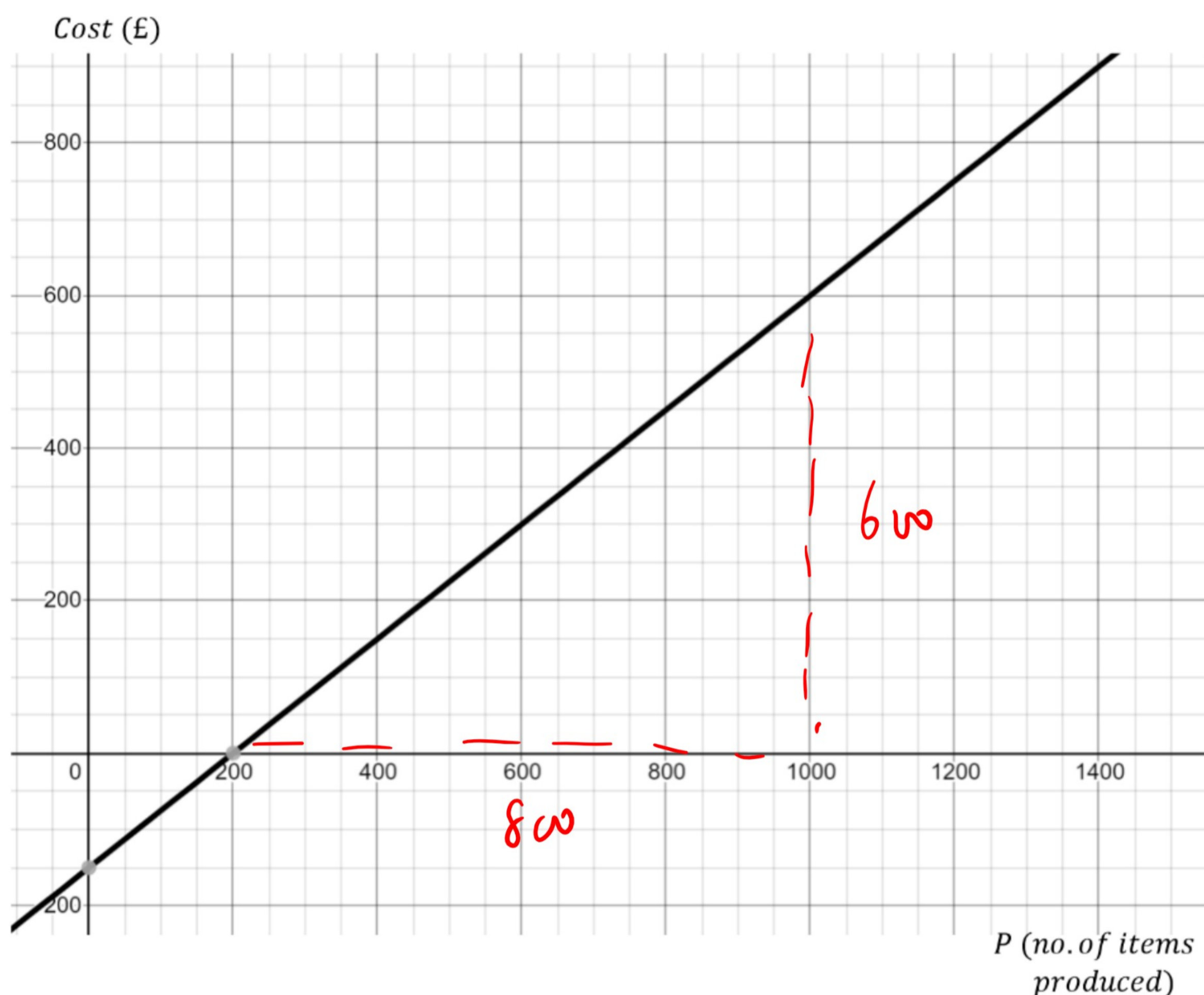
$$k = \frac{71}{2}$$

Answer: $\frac{71}{2}$
(2 marks)



Problem Questions:

Q9. The line is a model of the cost to produce different number of items at a factory.



a) Work out the gradient of the line.

$$\frac{600}{800}$$

Answer: $\frac{3}{4}$
(1 mark)

b) Interpret your answer to part (a) in the context of the model.

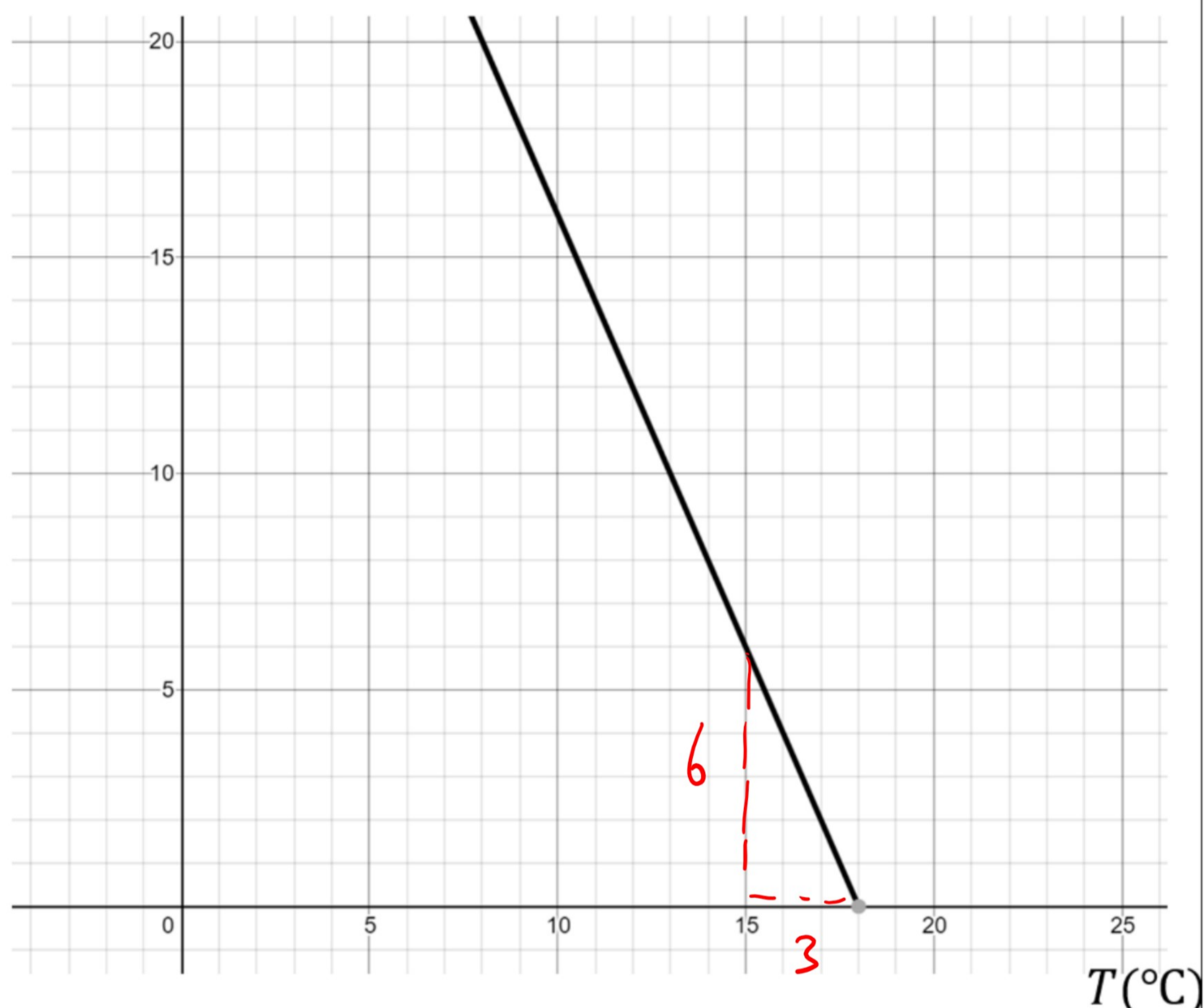
- for every 4 items produced, the cost increases by £3
- or for every 1 item produced, the cost increases by £0.75

Answer: _____
(1 mark)



Q10. The line is a model of the sales W of wool hats (in 1000's) at various temperatures T ($^{\circ}\text{C}$).

W hats (1000's)



a) Work out the gradient of the line. $-\frac{6}{3} = -2$

Answer: -2
(1 mark)

b) Interpret your answer to part (a) in the context of the model.

for each decrease in temperature by 1°C ,
the no. of hats sold decreases by 2000 hats

Answer: _____
(1 mark)