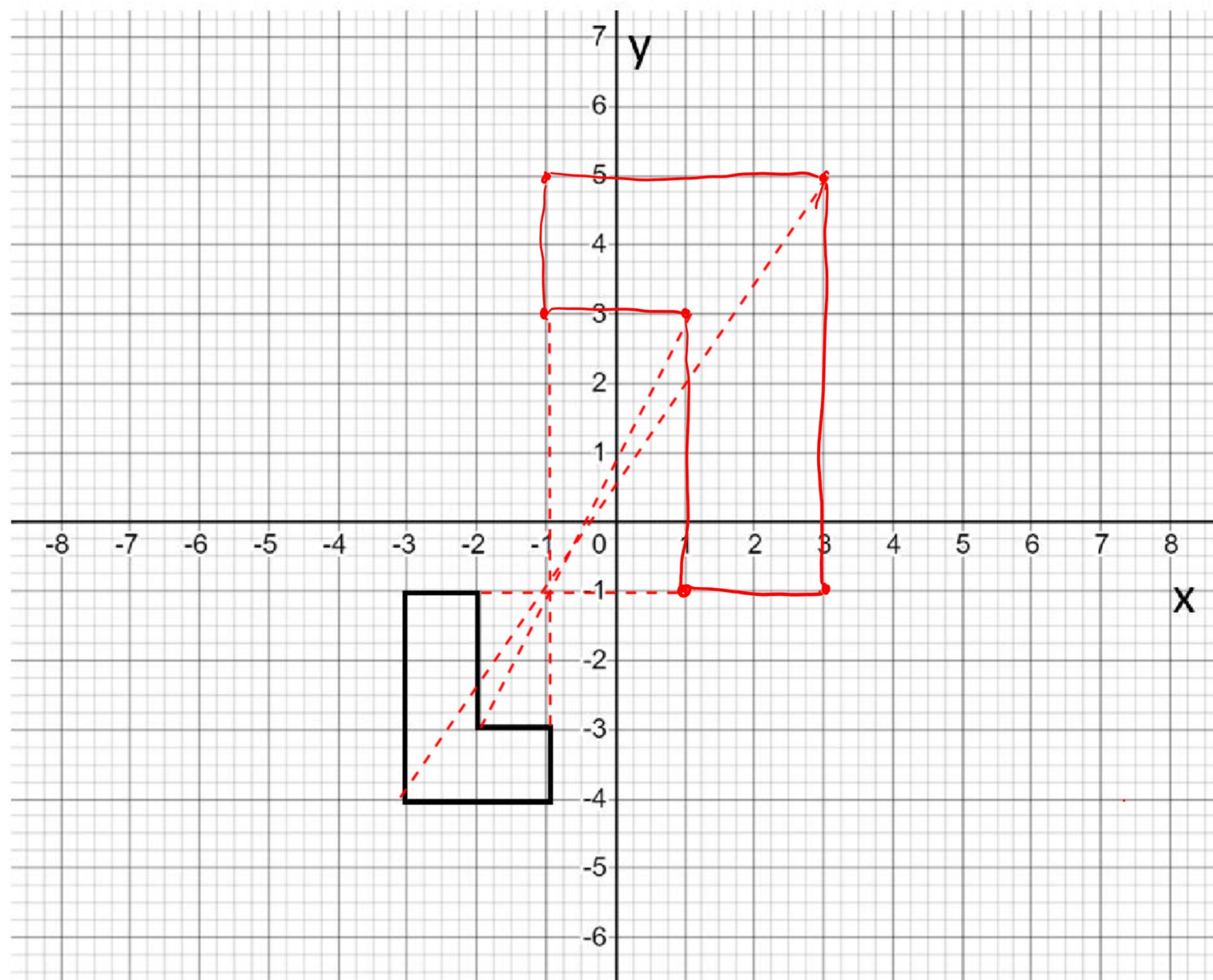




## Negative Scale Factor Enlargements Exam Practice

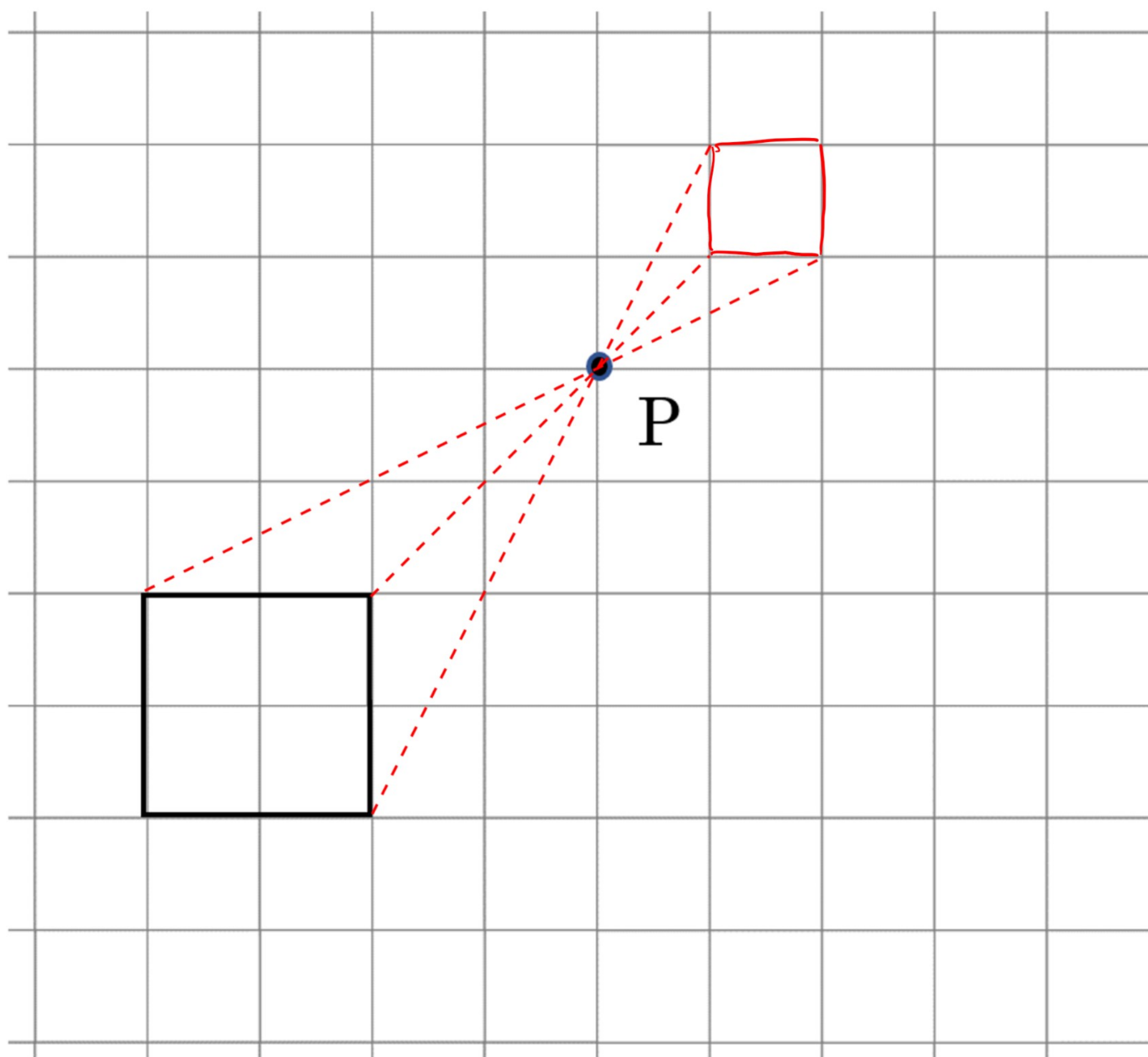
Q1. Draw an enlargement of the shape shown on the grid using a scale factor of  $-2$  about  $(-1, -1)$



(2 marks)



Q2. Draw an enlargement of the shape shown on the grid using a scale factor of  $\frac{1}{2}$  with centre point P.

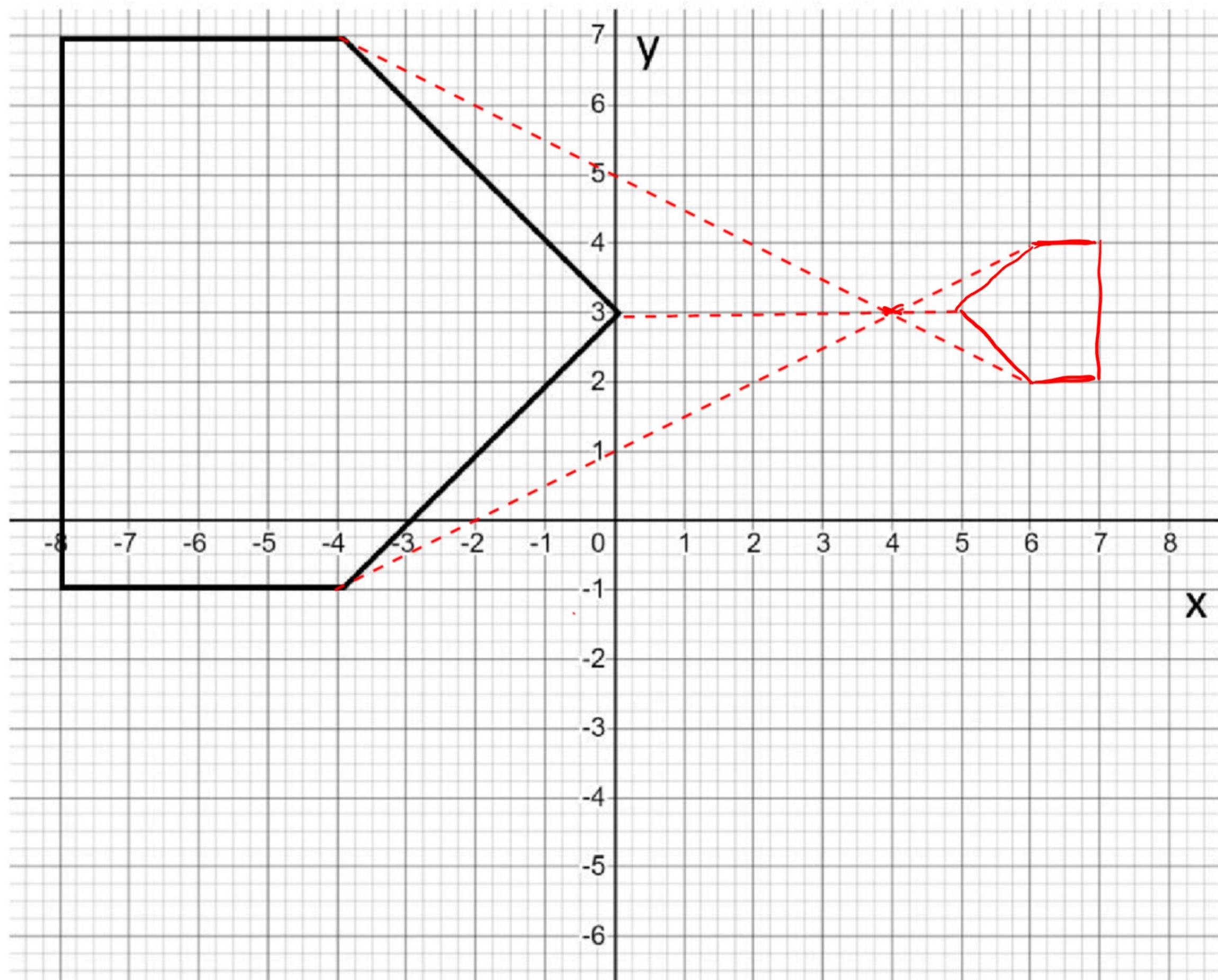


(2 marks)





Q3. Enlarge the shape shown by scale factor  $-\frac{1}{4}$  about the point  $(4,3)$ .

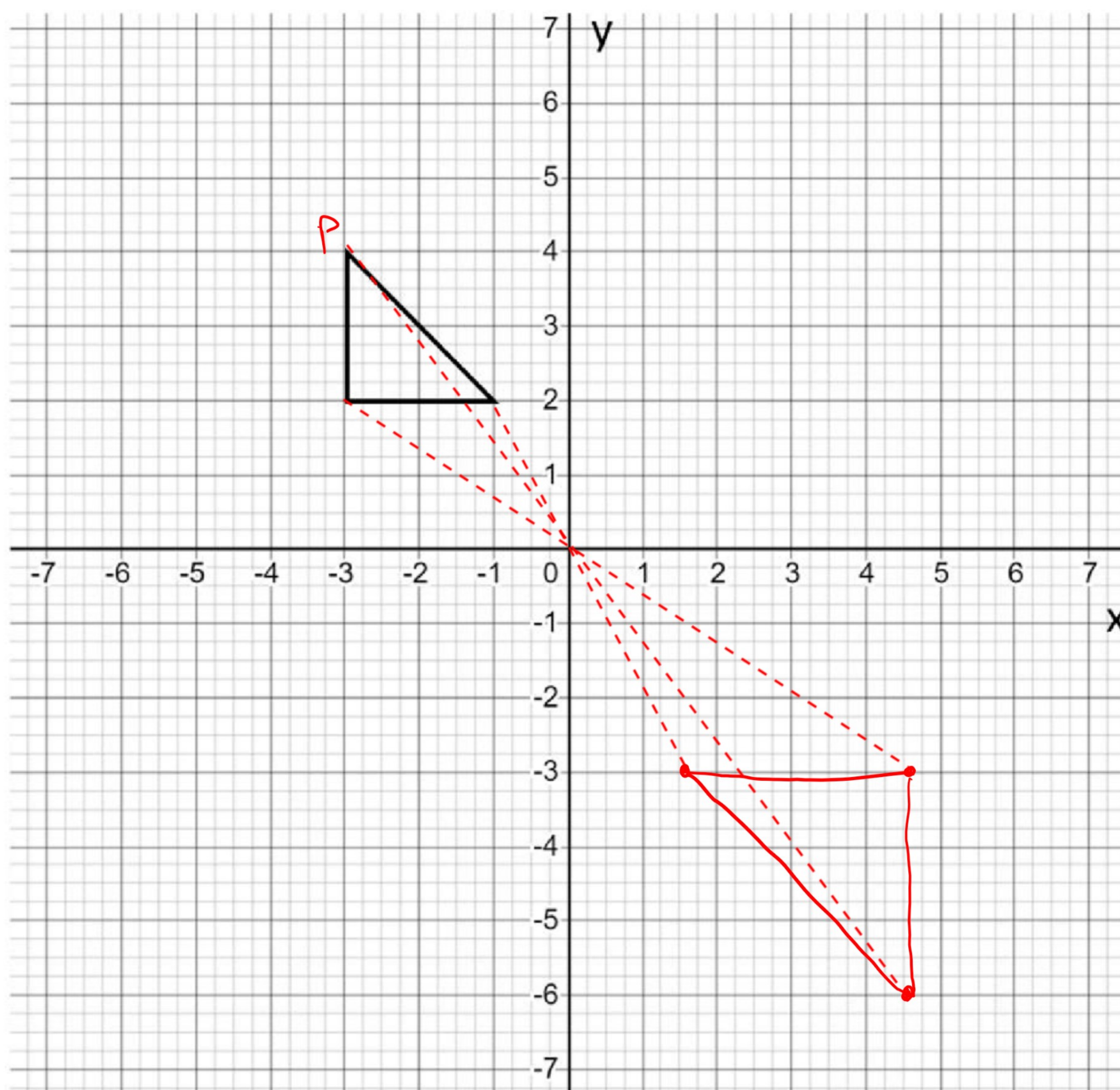


(2 marks)





Q4. Enlarge the shape shown by scale factor  $-1.5$  about the point  $(0,0)$ .



eg  $\vec{OP} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$

$$\Rightarrow OP' = -1.5 \times \begin{pmatrix} -3 \\ 4 \end{pmatrix} \\ = \begin{pmatrix} 4.5 \\ -6 \end{pmatrix}$$

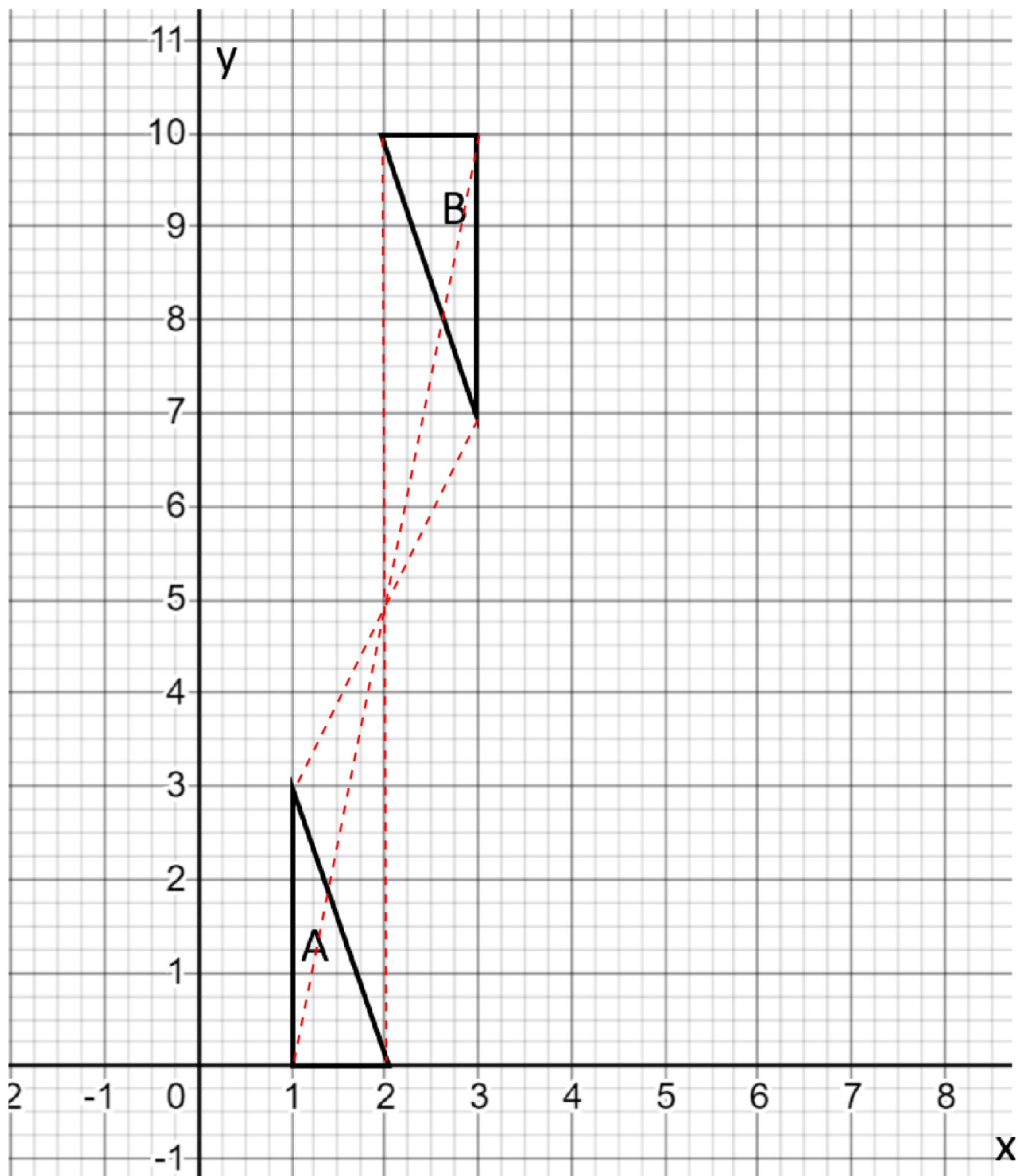
- other points can be worked out similarly.

(2 marks)





Q5. Describe fully the transformation which takes shape A to B.

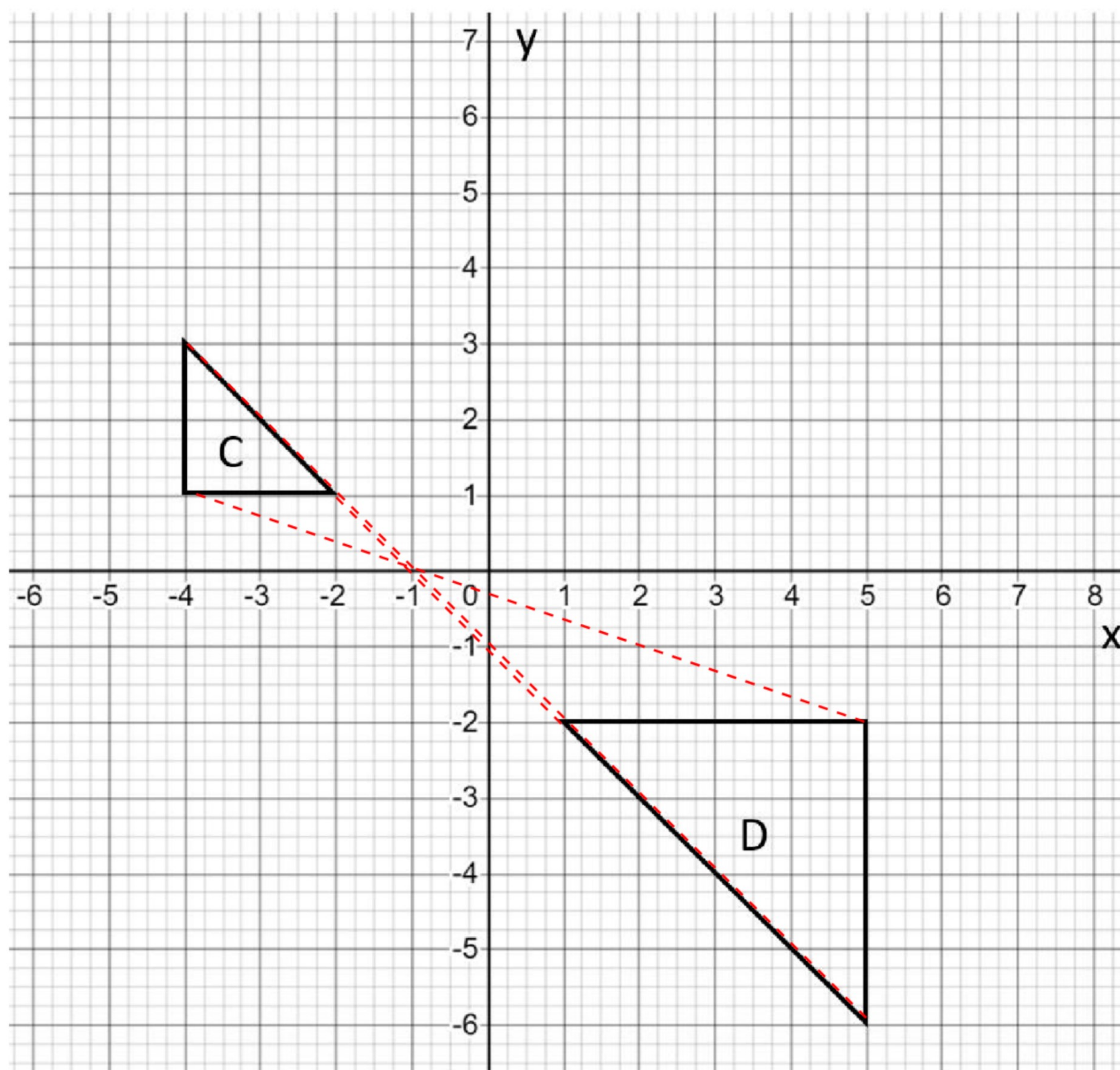


- enlargement
- centre  $(2, 5)$
- scale factor  $2$

(2 marks)



Q6. Describe fully the transformation which takes shape D to C.



- enlargement
- Centre  $(-1, 0)$
- Scale factor  $-2$

(3 marks)

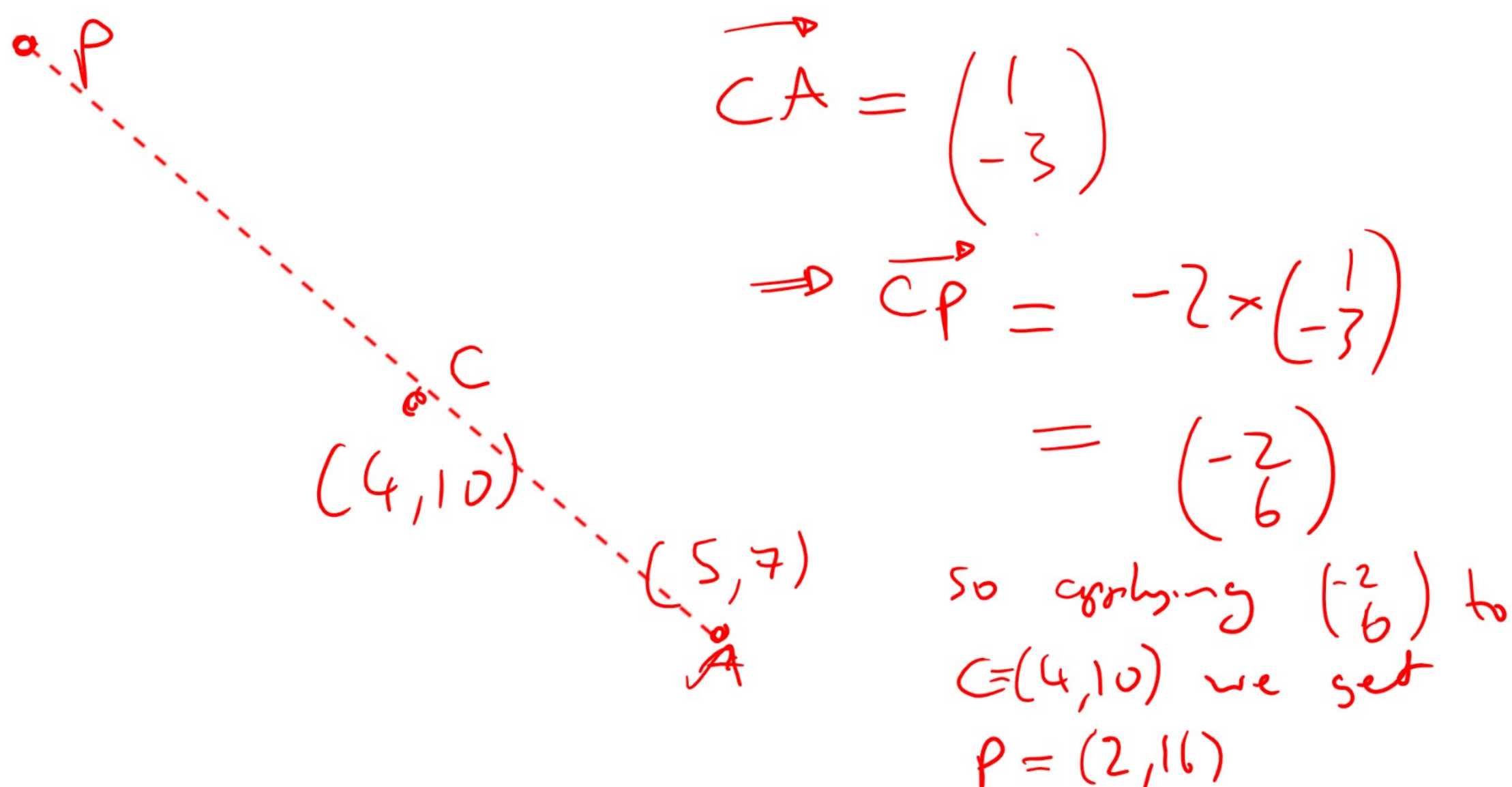




### Problem Questions:

Q7. A shape ABC is to be enlarged about the point (4,10) using a scale factor of -2 to form the shape PQR.

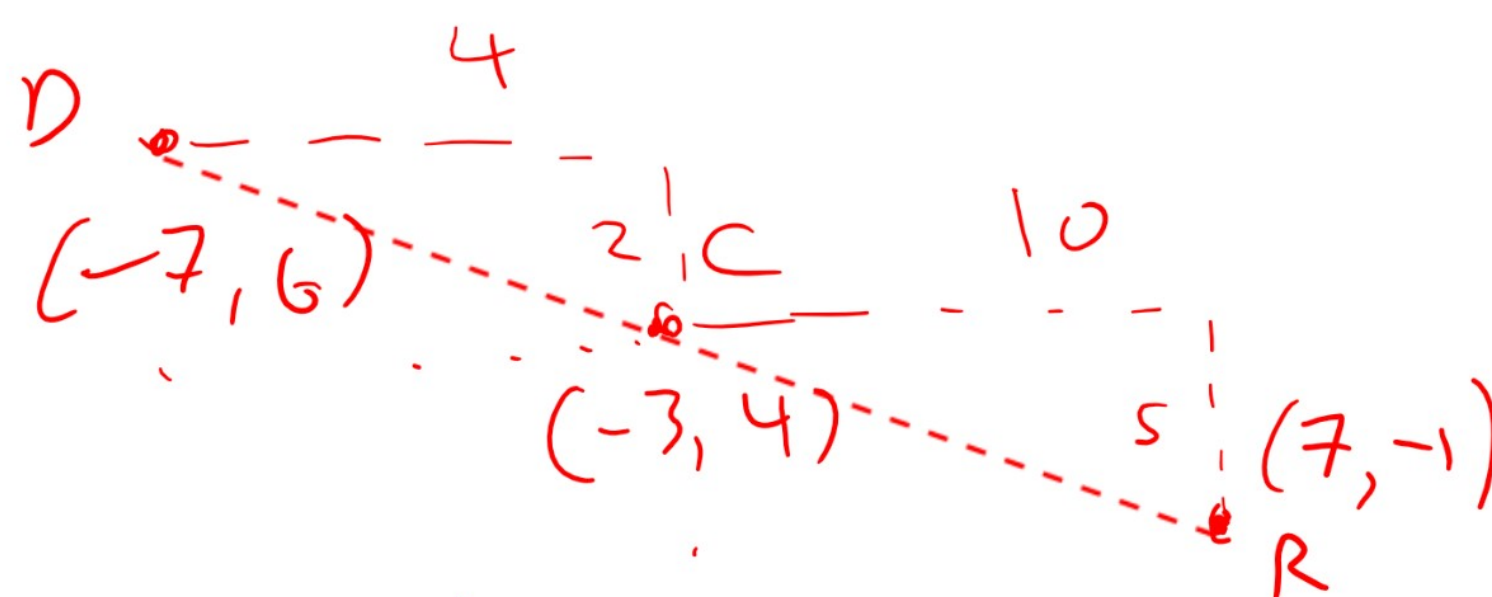
If A is the point (5, 7), work out the co-ordinates of point P.



Answer:                     (2, 16)                      
(2 marks)

Q8. A shape DEF is to be enlarged about the point (-3,4) using a scale factor  $n$  to form the shape RST.

If D is the point (-7, 6), and R is the point (7, -1) work out the value of  $n$ .

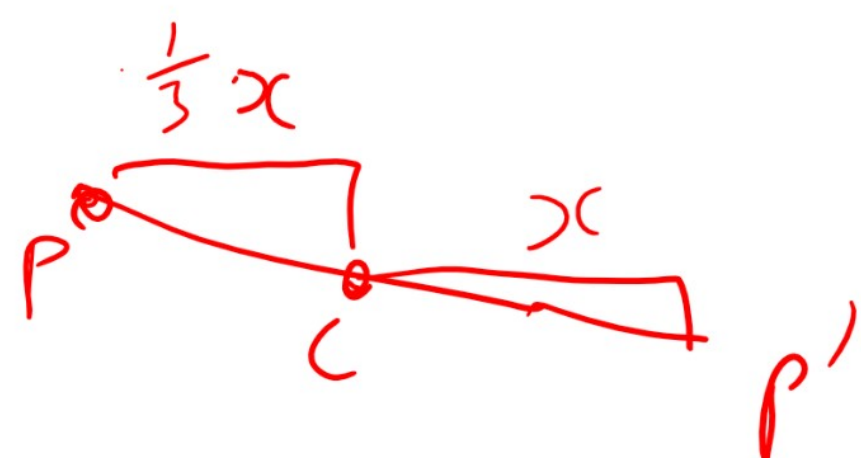
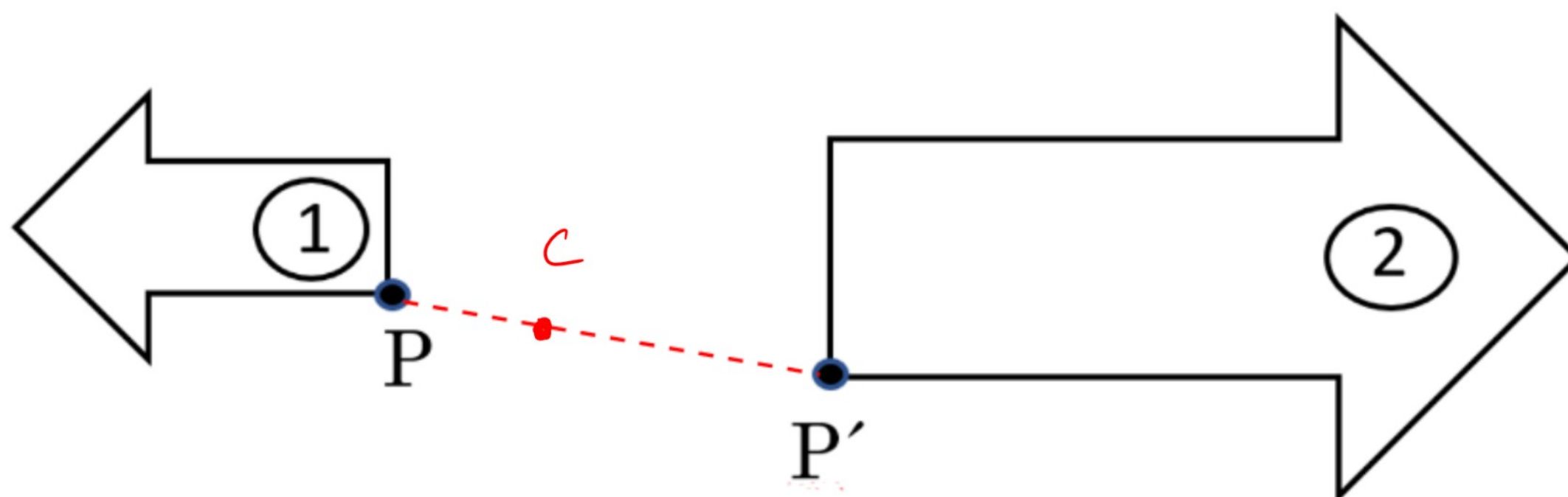


$\frac{10}{4} = 2.5$  and  $\frac{5}{2} = 2.5$   
R and D are 'opposite sides' of C so Scale factor -2.5

Answer:                     -2.5                      
(2 marks)



Q9. Below is a sketch of an enlargement. Shape 1 is an enlargement of shape 2, by scale factor  $1/3$ . Given that  $P = (2, -3)$  and  $P' = (14, 5)$ , work out the co-ordinates of the centre of enlargement.



where  $\vec{PP'} = \begin{pmatrix} 12 \\ 8 \end{pmatrix}$

$C$  divides  $PP'$  in the ratio  $\frac{1}{3} : 1 = 1 : 3$

$$\Rightarrow \vec{PC} = \frac{1}{4} \begin{pmatrix} 12 \\ 8 \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

Applying  $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$  to  $(2, -3)$   
we get  $C = (5, -1)$

Answer: (5, -1)

(3 marks)