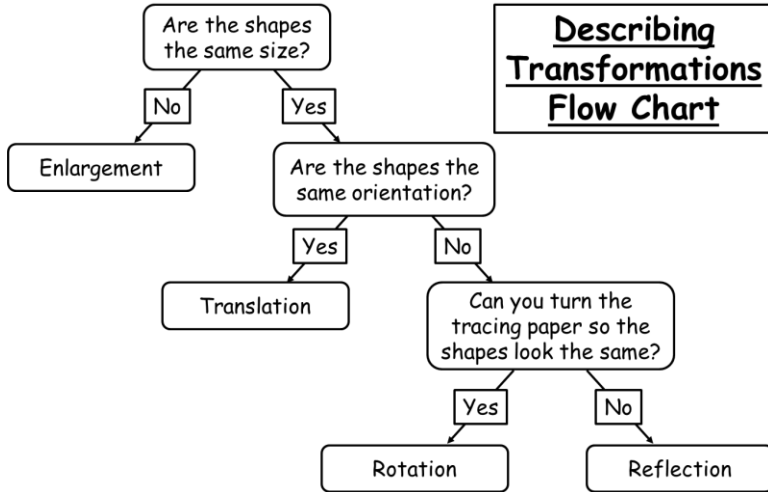


Describing Transformations

Things to remember:



Questions:

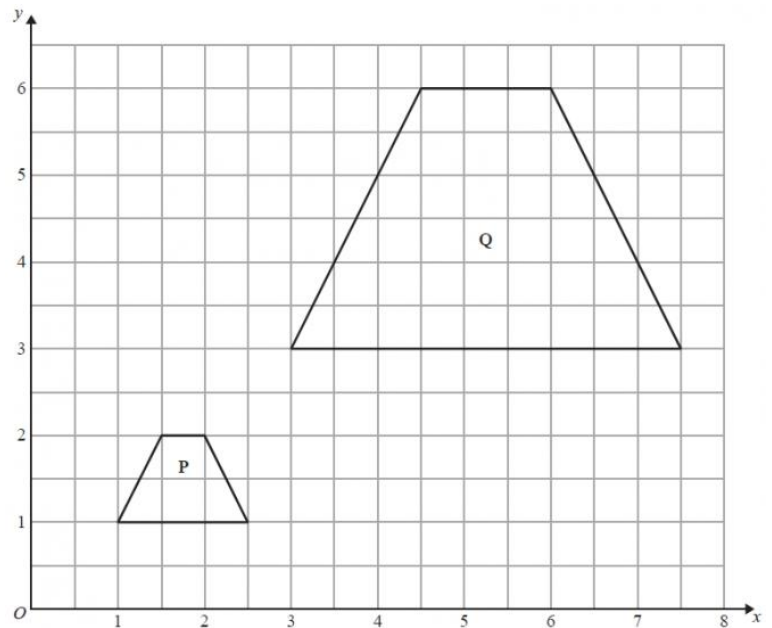
1. Describe fully the single transformation that maps shape P onto shape Q.

.....

.....

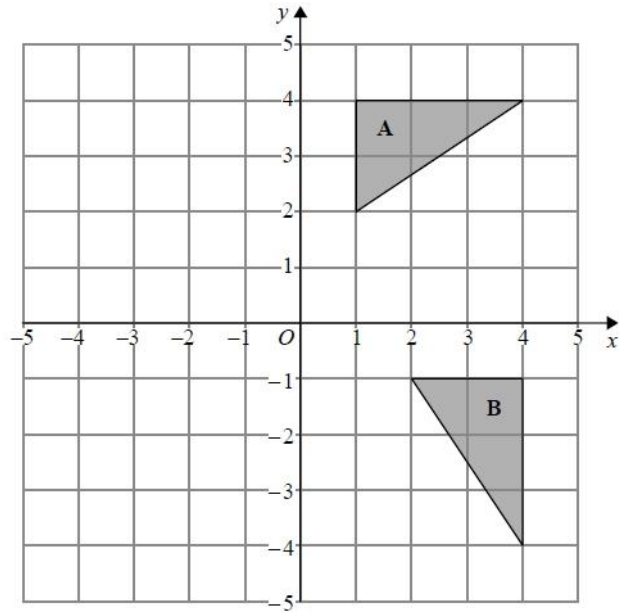
.....

(Total for Question is 3 marks)



2. Describe fully the single transformation that maps triangle A onto triangle B.

.....
.....
.....



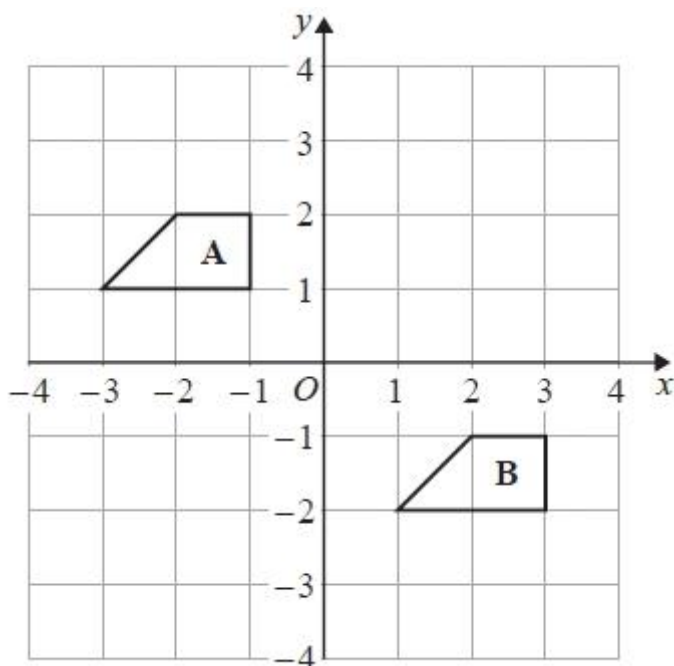
(Total for question = 2 marks)

3. Describe the single transformation that maps shape A onto shape B.

.....

.....

(Total for question = 2 marks)

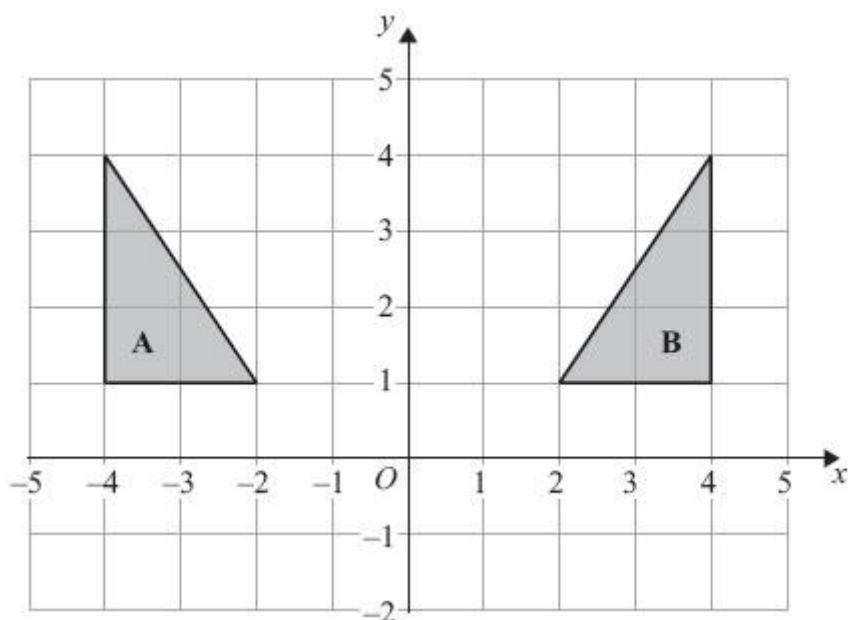


4. Describe fully the single transformation that maps shape A onto shape B.

.....

.....

(Total for Question is 2 marks)



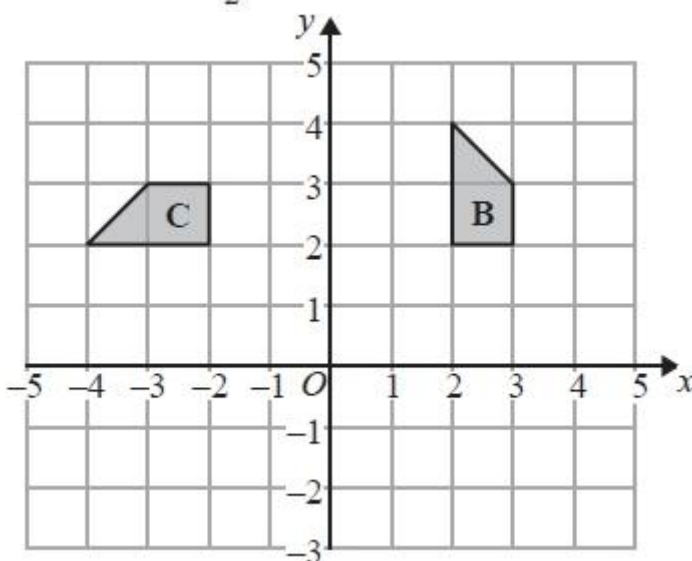
5. Describe fully the single transformation that maps shape B onto shape C.

.....

.....

.....

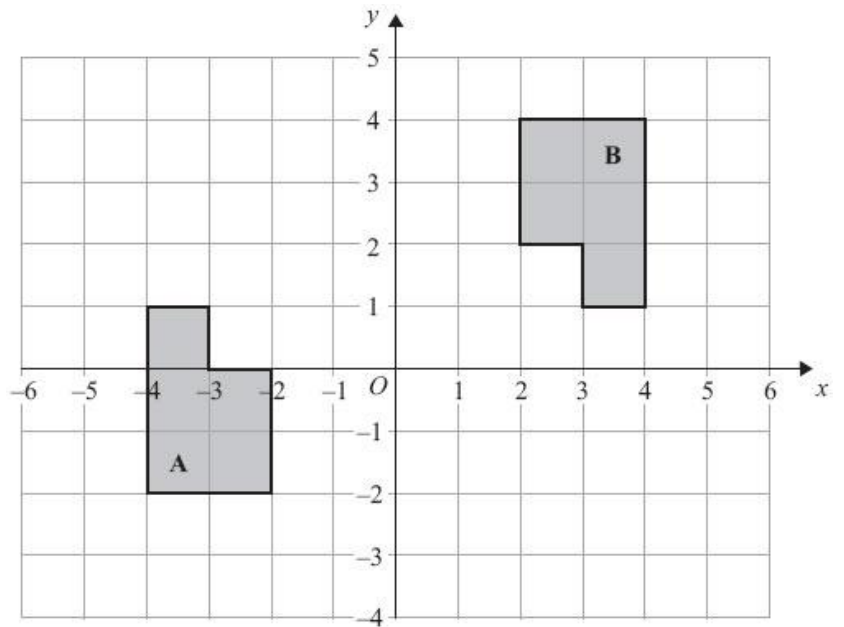
(Total for question = 3 marks)



6. Describe fully the single transformation that maps shape A onto shape B.

.....

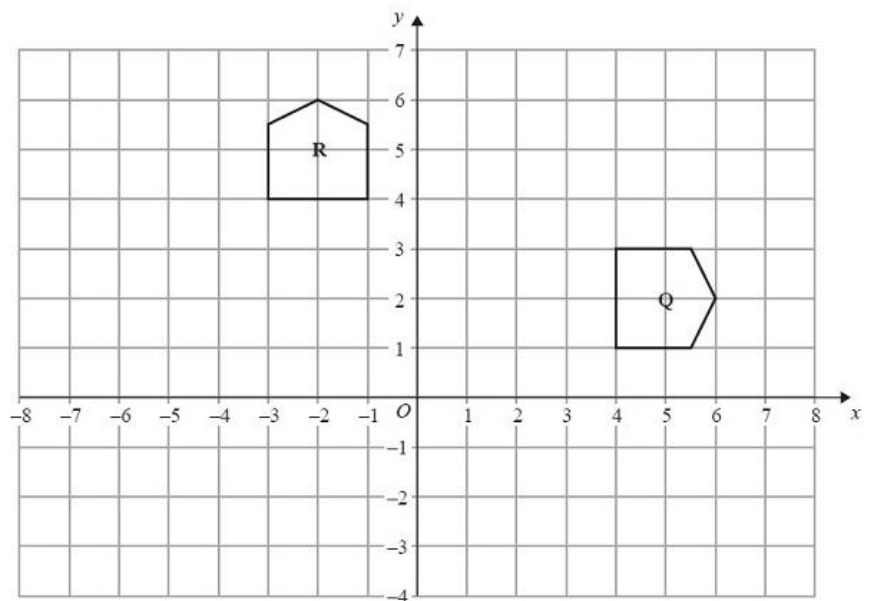
(Total for Question is 3 marks)



7. Describe fully the single transformation that maps shape Q onto shape R.

.....

(Total for Question is 3 marks)



Transformations – Enlargement (Fractional and Negative Scale Factors)

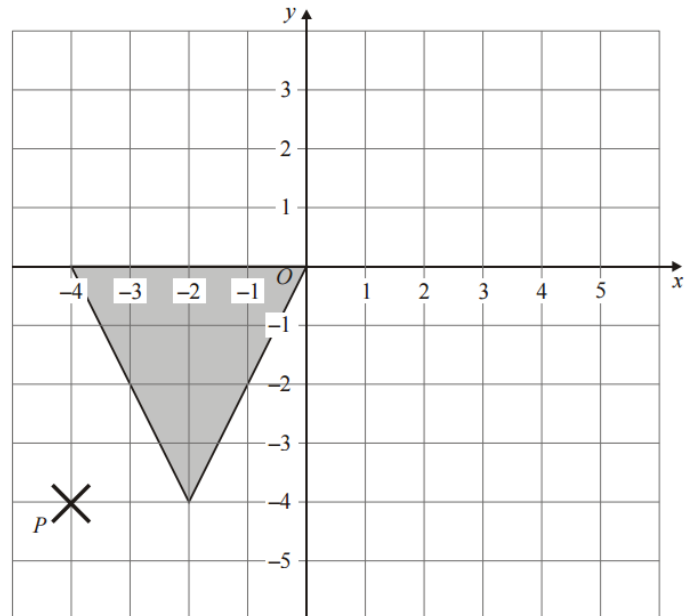
Things to remember:

- The shape is made bigger or smaller by a scale factor from a centre.
- If the scale factor is greater than 1, the shape gets bigger.
- If the scale factor is between 0 and 1, the shape get smaller.
- If the scale factor is negative, the shape is inversed through the centre of enlargement.
- Remember to enlarge the distance from the centre to the shape too!

Questions:

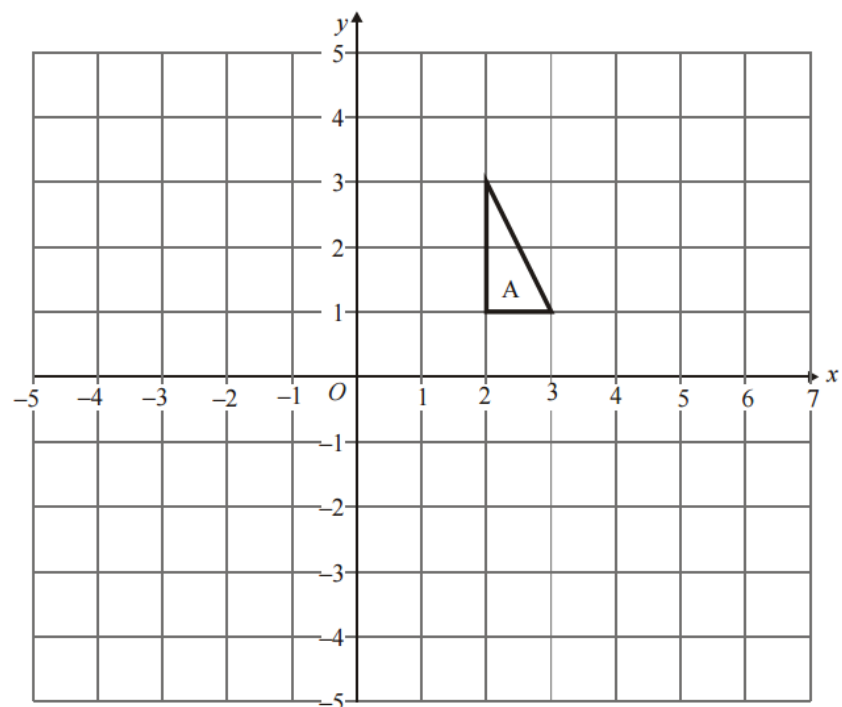
1. Enlarge the shaded triangle by a scale factor $1\frac{1}{2}$, centre P .

(Total 3 marks)

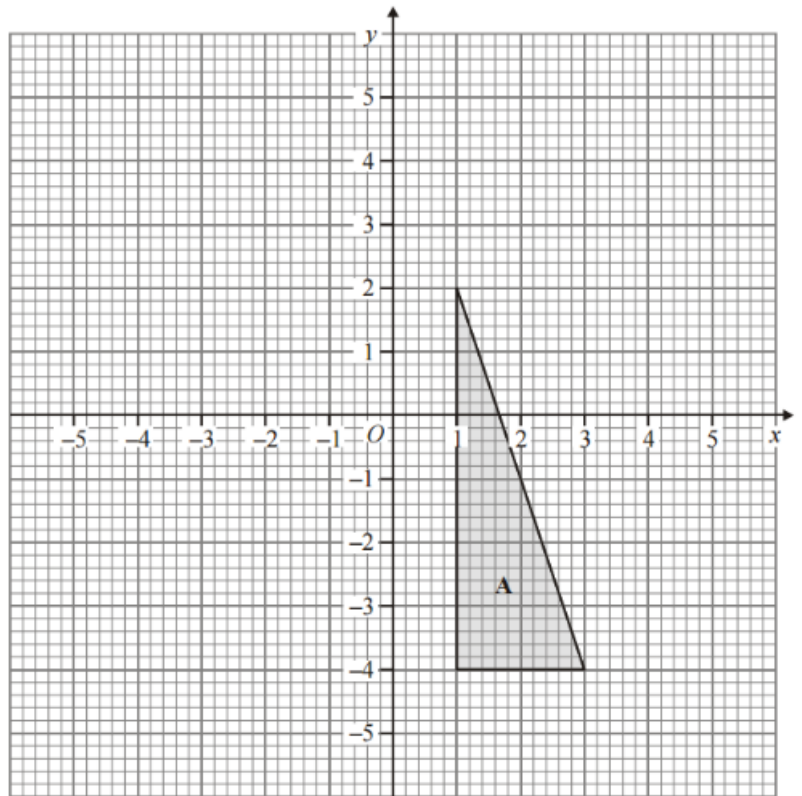


2. Enlarge triangle A by a scale factor $-1\frac{1}{2}$, centre O .

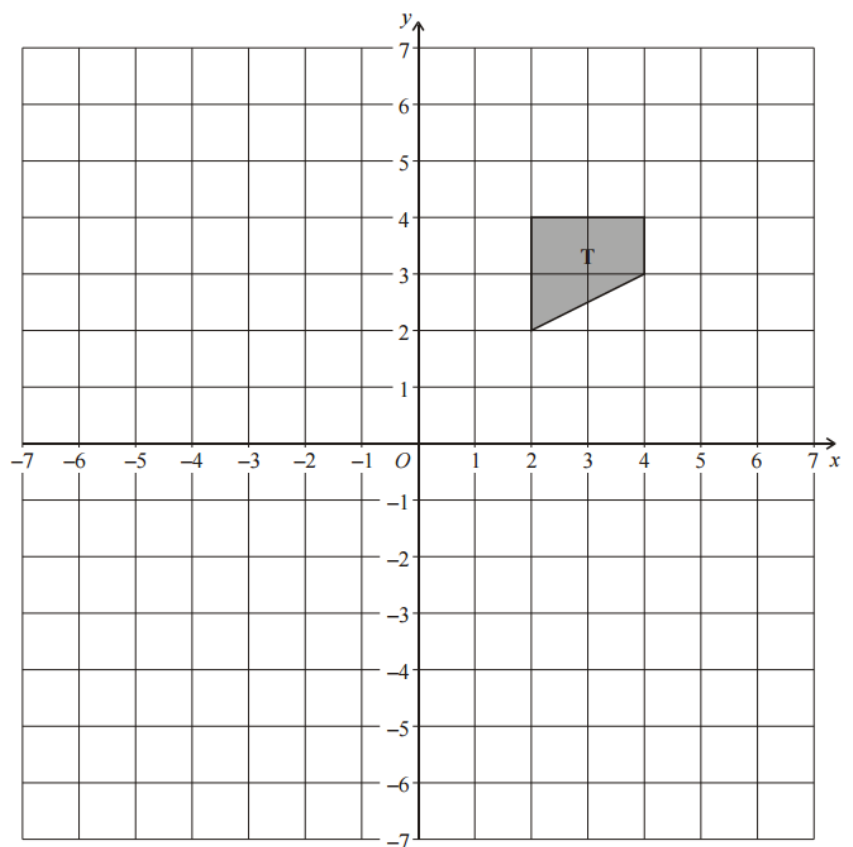
(Total 3 marks)



3. Enlarge triangle A by scale factor $-\frac{1}{2}$, centre $(-1, -2)$.
Label your triangle B.
(Total 3 marks)



4. Enlarge shape T with scale factor -1.5 , centre $(0, 2)$.
(Total 3 marks)



Vectors

Things to remember:

- Use the letter provided in the question.
- Going against the arrow is a negative.
- Vectors need to be written in bold or underlined.
- They can be manipulated similarly to algebra.

Questions:

1. The diagram shows a regular hexagon $ABCDEF$ with centre O .

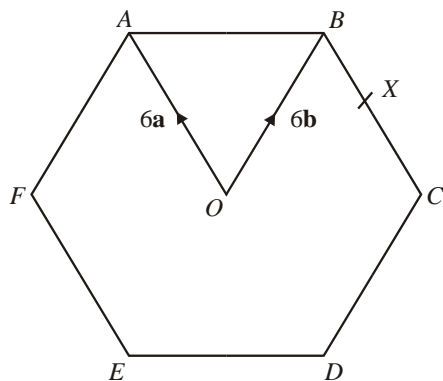


Diagram **NOT**
accurately drawn

$$\vec{OA} = 6\mathbf{a} \quad \vec{OB} = 6\mathbf{b}$$

(a) Express in terms of \mathbf{a} and/or \mathbf{b}

(i) \vec{AB} ,

(ii) \vec{EF} .

.....
.....
(2)

X is the midpoint of BC .

(b) Express \vec{EX} in terms of \mathbf{a} and/or \mathbf{b}

.....
(2)

Y is the point on AB extended, such that $AB : BY = 3:2$

(c) Prove that E , X and Y lie on the same straight line.

(3)
(Total 7 marks)

2. T is the point on PQ for which $PT : TQ = 2 : 1$.

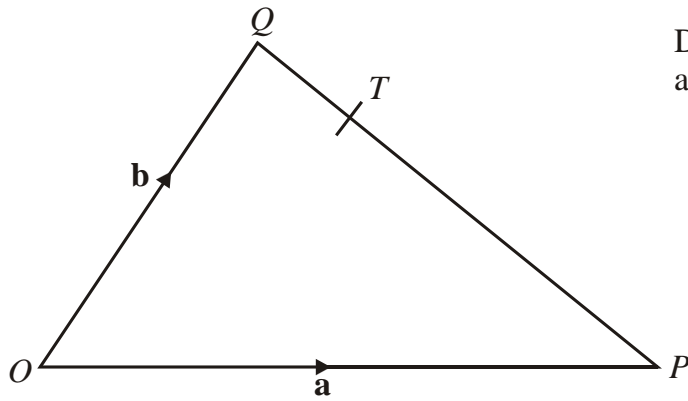


Diagram **NOT** accurately drawn

OPQ is a triangle.

$\vec{OP} = \mathbf{a}$ and $\vec{OQ} = \mathbf{b}$.

- (a) Write down, in terms of \mathbf{a} and \mathbf{b} , an expression for \vec{PQ} .

$\vec{PQ} = \dots\dots\dots$ (1)

- (b) Express \vec{OT} in terms of \mathbf{a} and \mathbf{b} .
Give your answer in its simplest form.

$\vec{OT} = \dots\dots\dots$ (2)
(Total 3 marks)

3. $OABC$ is a parallelogram.

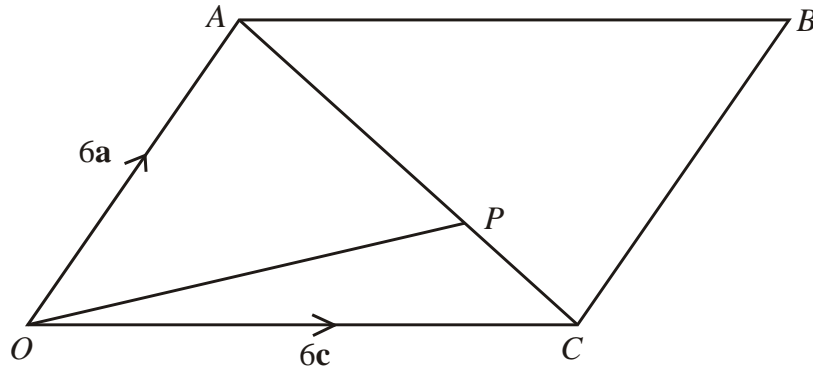


Diagram **NOT**
accurately drawn

P is the point on AC such that $AP = \frac{2}{3} AC$.

$$\vec{OA} = 6\mathbf{a}, \quad \vec{OC} = 6\mathbf{c}.$$

- (a) Find the vector \vec{OP} .
Give your answer in terms of \mathbf{a} and \mathbf{c} .

.....
(3)

The midpoint of CB is M .

- (b) Prove that OPM is a straight line.

(2)
(Total 5 marks)

4. OPQ is a triangle.
 R is the midpoint of OP .
 S is the midpoint of PQ .
 $\vec{OP} = \mathbf{p}$ and $\vec{OQ} = \mathbf{q}$

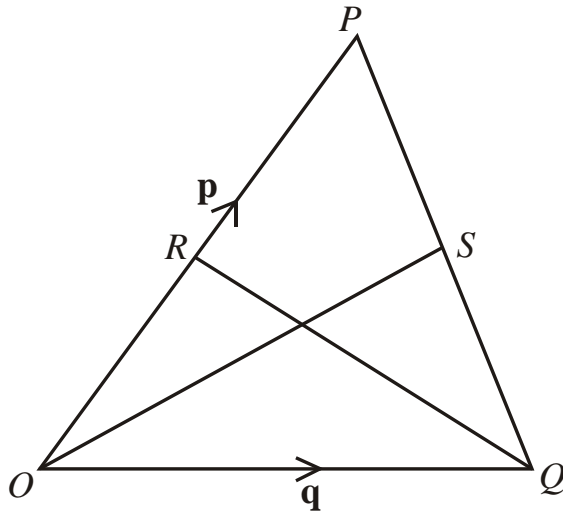


Diagram **NOT** accurately drawn

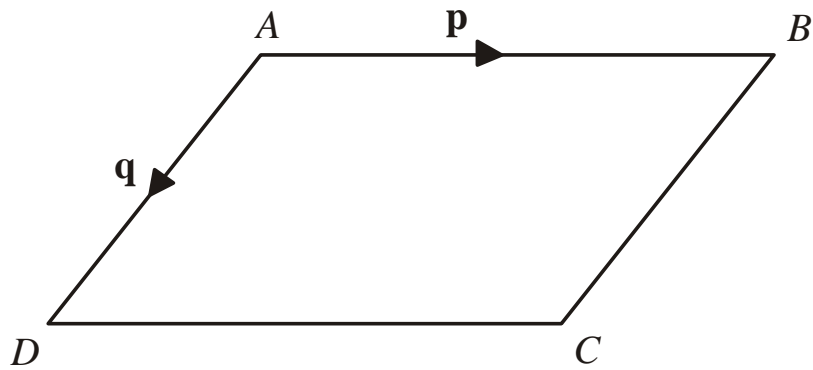
- (i) Find \vec{OS} in terms of \mathbf{p} and \mathbf{q} .

- (ii) Show that RS is parallel to OQ .

$\vec{OS} = \dots\dots\dots$

(Total 5 marks)

5. Diagram **NOT** accurately drawn



$ABCD$ is a parallelogram.
 AB is parallel to DC .
 AD is parallel to BC .

$$\vec{AB} = \mathbf{p}$$

$$\vec{AD} = \mathbf{q}$$

(a) Express, in terms of \mathbf{p} and \mathbf{q}

(i) \vec{AC}

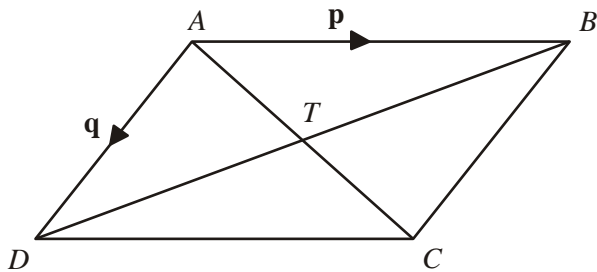
.....

(ii) \vec{BD}

.....

(2)

Diagram **NOT** accurately drawn



AC and BD are diagonals of parallelogram $ABCD$.
 AC and BD intersect at T .

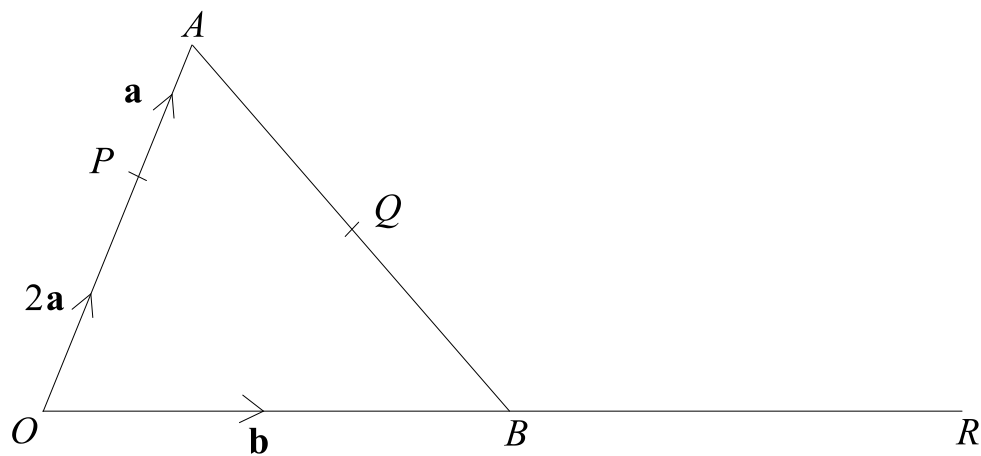
(b) Express \vec{AT} in terms of \mathbf{p} and \mathbf{q} .

.....

(1)

(Total 3 marks)

6. Diagram **NOT** accurately drawn
 OAB is a triangle.
 B is the midpoint of OR .
 Q is the midpoint of AB .
 $\vec{OP} = 2\mathbf{a}$ $\vec{PA} = \mathbf{a}$ $\vec{OB} = \mathbf{b}$



(a) Find, in terms of \mathbf{a} and \mathbf{b} , the vectors

(i) \vec{AB} ,

.....

(ii) \vec{PR} ,

.....

(iii) \vec{PQ} .

.....

(4)

(b) Hence explain why PQR is a straight line.

(2)

The length of PQ is 3 cm.

(c) Find the length of PR .

..... cm

(1)

(Total 7 marks)