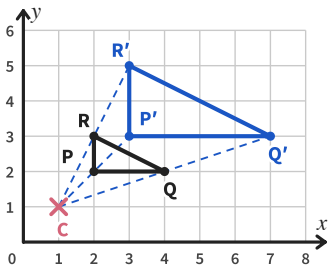
Enlargement from a centre

ANSWERS

1

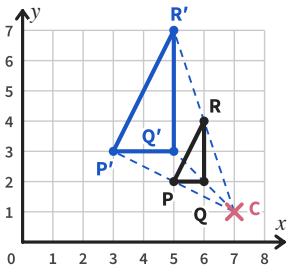
Enlarge the shape by scale factor **2** about the centre **C (1, 1)**.



Vertex	Journey from C	Journey × 2	New vertex
P (2, 2)	right 1, up 1	right 2, up 2	P′ (3, 3)
Q (4, 2)	right 3, up 1	*right 6, up 2*	*Q′ (7, 3)*
R (2, 3)	right 1, up 2	*right 2, up 4*	*R′ (3, 5)*

2

Enlarge the shape by scale factor **2** about the centre **C (7, 1)**.

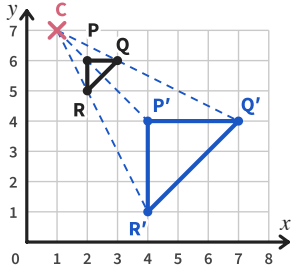


Vertex	Journey from C	Journey × 2	New vertex
P (5, 2)	left 2, up 1	*left 4, up 2*	*P′ (3, 3)*
Q (6, 2)	left 1, up 1	*left 2, up 2*	*Q′ (5, 3)*
R (6, 4)	left 1, up 3	*left 2, up 6*	*R′ (5, 7)*

3

Notice the change!

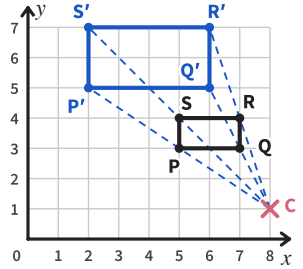
Enlarge the shape by scale factor **3** about the centre **C (1, 7)**.



Vertex	Journey from C	Journey × 3	New vertex
P (2, 6)	right 1, down 1	*right 3, down 3*	*P′ (4, 4)*
Q (3, 6)	*right 2, down 1*	*right 6, down 3*	*Q′ (7, 4)*
R (2, 5)	*right 1, down 2*	*right 3, down 6*	*R′ (4, 1)*

4

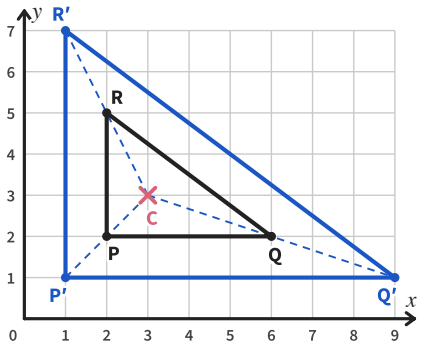
Enlarge the shape by scale factor **2** about the centre **C (8, 1)**.



Vertex	Journey from C	Journey × 2	New vertex
P (5, 3)	*left 3, up 2*	*left 6, up 4*	*P′ (2, 5)*
Q (7, 3)	*left 1, up 2*	*left 2, up 4*	*Q′ (6, 5)*
R (7, 4)	*left 1, up 3*	*left 2, up 6*	*R′ (6, 7)*
S (5, 4)	*left 3, up 3*	*left 6, up 6*	*S′ (2, 7)*

5

The centre **C (3, 3)** is inside the triangle.
Enlarge it by scale factor **2**.
No table this time.



6

Ella enlarges **P (4, 3)** by scale factor 2 about **C (2, 1)**. She says the new P is (8, 6). Explain her mistake. Find the new P.

She doubled the coordinates, not the journey from C

journey from C: *right 2, up 2*

× 2: *right 4, up 4*

New P *(6, 5)*

7

Enlarge the point **(3, 3)** by scale factor 3 about the centre **(1, 2)**.

journey from C: *right 2, up 1*

× 3: *right 6, up 3*

New point *(7, 5)*

8

A triangle has sides 3 cm, 4 cm and 5 cm.
It is enlarged by scale factor 3.
Find the lengths of the sides of the image.

every side × 3

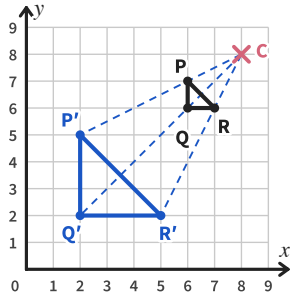
Sides *9 cm, 12 cm, 15 cm*

Enlargement from a centre *further practice*

ANSWERS

9

Enlarge the triangle by scale factor 3 about C (8, 8).



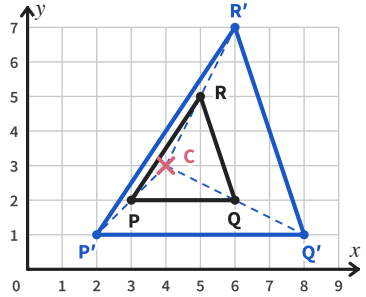
P: left 2, down 1 → left 6, down 3

R: left 1, down 2 → left 3, down 6

Answer *P' (2, 5), Q' (2, 2), R' (5, 2)*

10

Enlarge the triangle by scale factor 2 about C (4, 3), inside it.



P: left 1, down 1 → left 2, down 2

R: right 1, up 2 → right 2, up 4

Answer *P' (2, 1), Q' (8, 1), R' (6, 7)*

11

A triangle has corners (3, 5), (5, 4) and (4, 6). It is enlarged by scale factor 2 about (2, 3). Find the new corners.

right 1, up 2 → right 2, up 4

right 3, up 1 → right 6, up 2

Answer *(4, 7), (8, 5), (6, 9)*

12

A phone case design is a rectangle 5 cm by 2 cm. It is enlarged by scale factor 3. Find the perimeter of the enlargement.

15 cm by 6 cm

15 + 6 + 15 + 6 = 42

Answer *42 cm*

13

An enlargement by scale factor 2 about (1, 1) takes the point A to (7, 5). Find A.

from (1, 1) to (7, 5): right 6, up 4

halve it: right 3, up 2

Answer *A = (4, 3)*

14

Kai enlarges a rectangle 2 cm by 1 cm by scale factor 3. He draws a rectangle 6 cm by 2 cm. Is he right? Explain.

every side should be × 3: 6 cm by 3 cm

his is not the same shape

Answer *No*

15

On a garden plan, a flower bed is a triangle with corners (2, 2), (4, 2) and (2, 3). It is enlarged by scale factor 3 about the tap at (1, 1). Find the corners of the new bed.

right 1, up 1 → right 3, up 3

right 3, up 1 → right 9, up 3

Answer *(4, 4), (10, 4), (4, 7)*

16

Lena says: "Enlarging about (0, 0) is the same as multiplying the coordinates." Is she right? Explain.

from (0, 0), a journey is the coordinates

so × the journey = × the coordinates

Answer *Yes*