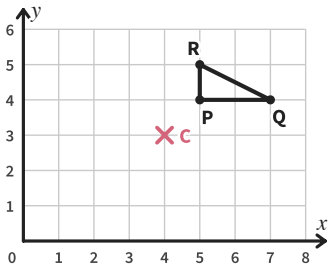
Enlargement by a negative scale factor

1

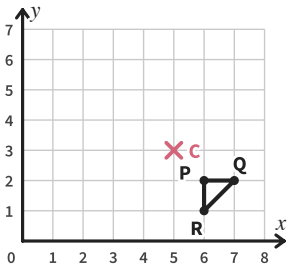
Enlarge the shape by scale factor **−1** about the centre **C (4, 3)**.



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

2

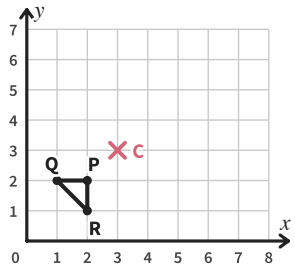
Enlarge the shape by scale factor **−2** about the centre **C (5, 3)**.



Vertex	Journey from C	Journey × −2	New vertex
P (6, 2)	right 1, down 1		
Q (7, 2)	right 2, down 1		
R (6, 1)	right 1, down 2		

3

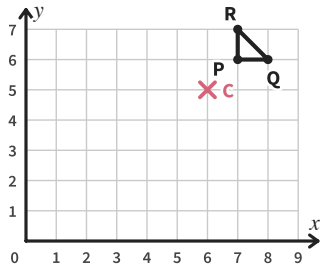
Enlarge the shape by scale factor **−2** about the centre **C (3, 3)**.



Vertex	Journey from C	Journey × −2	New vertex
P (2, 2)	left 1, down 1		
Q (1, 2)			
R (2, 1)			

4

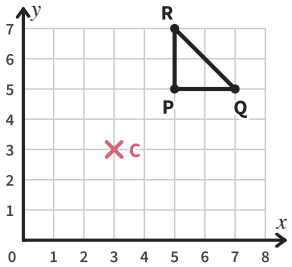
Enlarge the shape by scale factor **−2** about the centre **C (6, 5)**.



Vertex	Journey from C	Journey × −2	New vertex
P (7, 6)			
Q (8, 6)			
R (7, 7)			

5 *Notice the change!*

Enlarge the shape by scale factor **−½** about the centre **C (3, 3)**.



Vertex	Journey from C	Journey × −½	New vertex
P (5, 5)	right 2, up 2		
Q (7, 5)			
R (5, 7)			

6

Omar enlarges **P (5, 7)** by scale factor −2 about **C (4, 5)**. He says the new P is (6, 9). Explain his mistake. Find the new P.

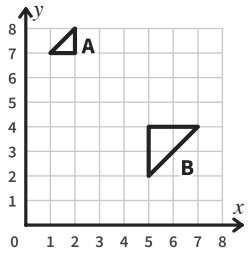
journey from C: _____

reverse, × 2: _____

New P _____

7

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



Transformation _____

Scale factor _____

Centre _____

8

Enlarge the point **(8, 7)** by scale factor −½ about the centre **(4, 3)**.

journey from C: _____

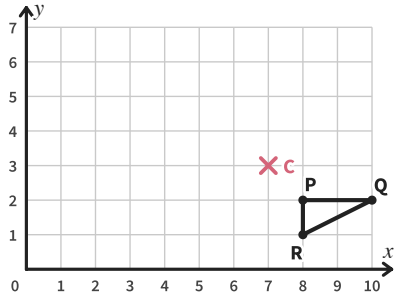
reverse, halve: _____

New point _____

Enlargement by a negative scale factor *further practice*

9

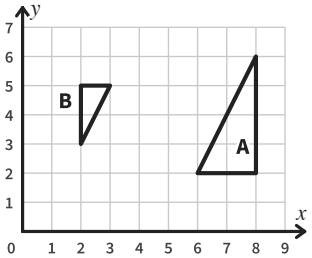
Enlarge the triangle by scale factor −2 about C (7, 3).



Answer _____

10

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



Answer _____

11

In a computer game, a shield is a triangle with corners (6, 7), (8, 7) and (6, 9). The game enlarges it by scale factor −½ about (4, 5). Find the corners of the new shield.

Answer _____

12

An enlargement by scale factor −1 about (3, 2) has the same effect as a single rotation.
Describe the rotation fully.

Answer _____

13

An enlargement by scale factor −2 about (6, 3) takes the point A to (2, 1). Find A.

Answer _____

14

A rectangular tile design is 8 cm by 6 cm. It is enlarged by scale factor −½. Find the perimeter of the image.

Answer _____

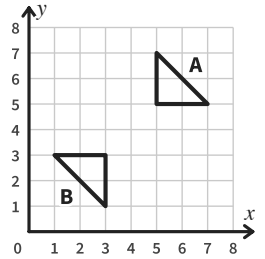
15

Ben enlarges a triangle by scale factor −2. His image is twice as big, the right way up, and on the same side of the centre as the triangle.
Explain his mistake.

Answer _____

16

Describe fully the single transformation that maps A onto B. Give two different answers.



Answer _____