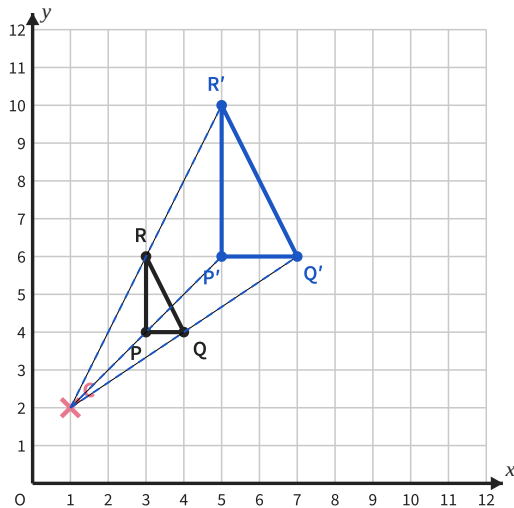
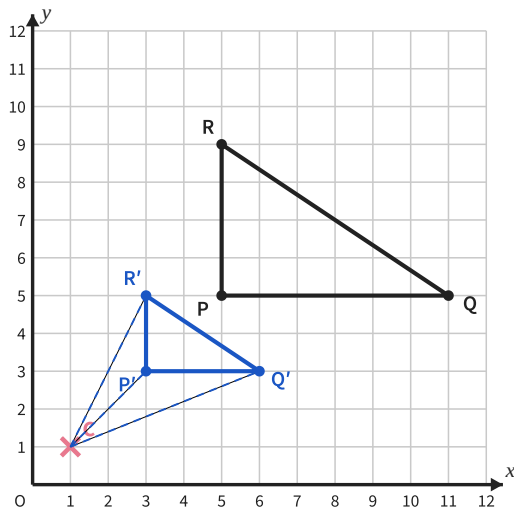


Enlargement: Integer and Fractional Scale Factors



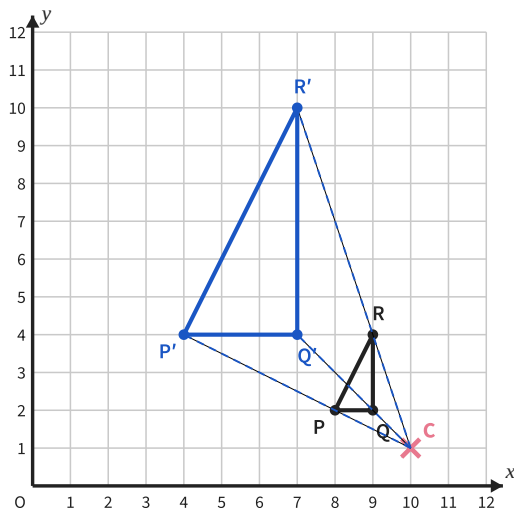
1 Enlarge the shape by scale factor 2 about the centre C (1, 2).

Vertex	Journey from C	Journey $\times 2$	Image vertex
P (3, 4)	right 2, up 2	<i>right 4, up 4</i>	<i>P' (5, 6)</i>
Q (4, 4)	right 3, up 2	<i>right 6, up 4</i>	<i>Q' (7, 6)</i>
R (3, 6)	right 2, up 4	<i>right 4, up 8</i>	<i>R' (5, 10)</i>



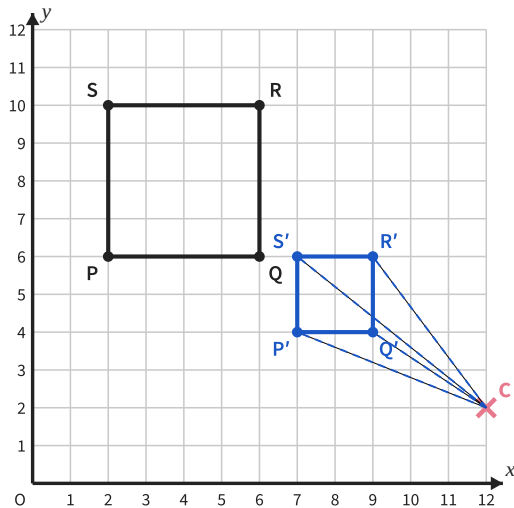
2 Enlarge the shape by scale factor $\frac{1}{2}$ about the centre C (1, 1).

Vertex	Journey from C	Journey $\times \frac{1}{2}$	Image vertex
P (5, 5)	right 4, up 4	<i>right 2, up 2</i>	<i>P' (3, 3)</i>
Q (11, 5)	right 10, up 4	<i>right 5, up 2</i>	<i>Q' (6, 3)</i>
R (5, 9)	right 4, up 8	<i>right 2, up 4</i>	<i>R' (3, 5)</i>



3 Enlarge the shape by scale factor 3 about the centre C (10, 1).

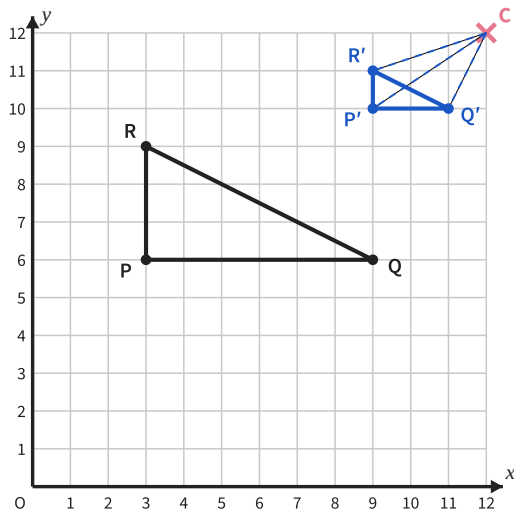
Vertex	Journey from C	Journey $\times 3$	Image vertex
P (8, 2)	left 2, up 1	<i>left 6, up 3</i>	<i>P' (4, 4)</i>
Q (9, 2)	left 1, up 1	<i>left 3, up 3</i>	<i>Q' (7, 4)</i>
R (9, 4)	left 1, up 3	<i>left 3, up 9</i>	<i>R' (7, 10)</i>



4

Enlarge the shape by scale factor $\frac{1}{2}$ about the centre C (12, 2).

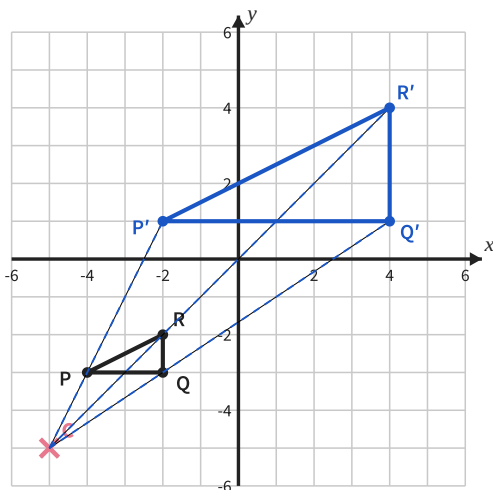
Vertex	Journey from C	Journey $\times \frac{1}{2}$	Image vertex
P (2, 6)	left 10, up 4	left 5, up 2	P' (7, 4)
Q (6, 6)	left 6, up 4	left 3, up 2	Q' (9, 4)
R (6, 10)	left 6, up 8	left 3, up 4	R' (9, 6)
S (2, 10)	left 10, up 8	left 5, up 4	S' (7, 6)



5

Enlarge the shape by scale factor $\frac{1}{3}$ about the centre C (12, 12).

Vertex	Journey from C	Journey $\times \frac{1}{3}$	Image vertex
P (3, 6)	left 9, down 6	left 3, down 2	P' (9, 10)
Q (9, 6)	left 3, down 6	left 1, down 2	Q' (11, 10)
R (3, 9)	left 9, down 3	left 3, down 1	R' (9, 11)



6

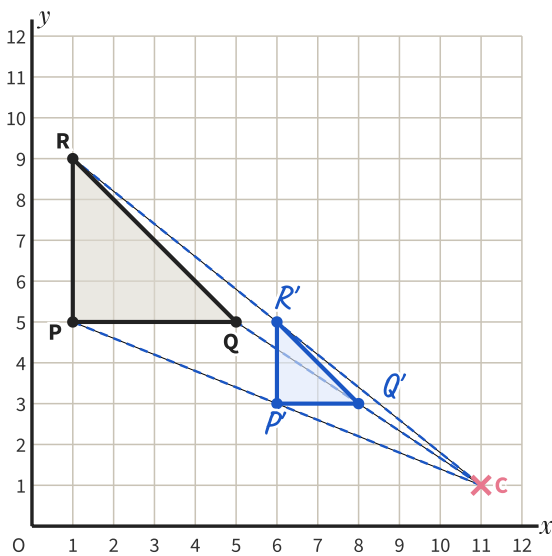
Enlarge the shape by scale factor 3 about the centre C (-5, -5).

P right 1, up 2 $\rightarrow$ right 3, up 6 $\rightarrow$ P' (-2, 1)
 Q right 3, up 2 $\rightarrow$ right 9, up 6 $\rightarrow$ Q' (4, 1)
 R right 3, up 3 $\rightarrow$ right 9, up 9 $\rightarrow$ R' (4, 4)

Enlargement: Integer and Fractional Scale Factors

Factors *further practice*

ANSWERS 



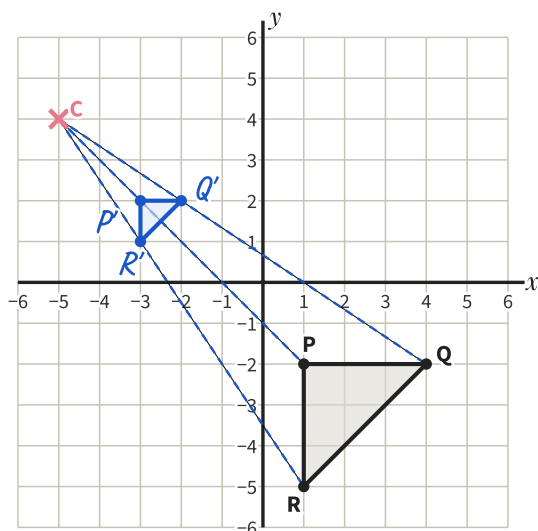
5

Enlarge the shape by scale factor $\frac{1}{2}$ about the centre C (11, 1).

P left 10, up 4 → left 5, up 2 → P' (6, 3)

Q left 6, up 4 → left 3, up 2 → Q' (8, 3)

R left 10, up 8 → left 5, up 4 → R' (6, 5)



6

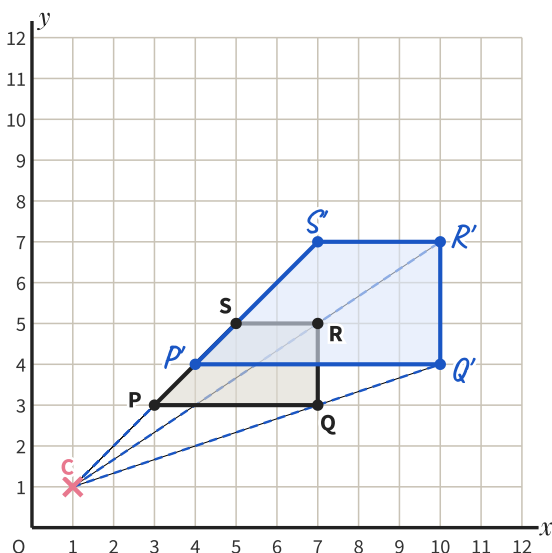
A garden designer draws a smaller copy of the flower bed PQR.

The copy is an enlargement by scale factor $\frac{1}{3}$ about the centre C (-5, 4). Draw the copy.

P right 6, down 6 → right 2, down 2 → P' (-3, 2)

Q right 9, down 6 → right 3, down 2 → Q' (-2, 2)

R right 6, down 9 → right 2, down 3 → R' (-3, 1)



7

A photo app enlarges the frame PQRS by scale factor $1\frac{1}{2}$ about the centre C (1, 1). Draw the enlarged frame.

P right 2, up 2 → right 3, up 3 → P' (4, 4)

Q right 6, up 2 → right 9, up 3 → Q' (10, 4)

R right 6, up 4 → right 9, up 6 → R' (10, 7)

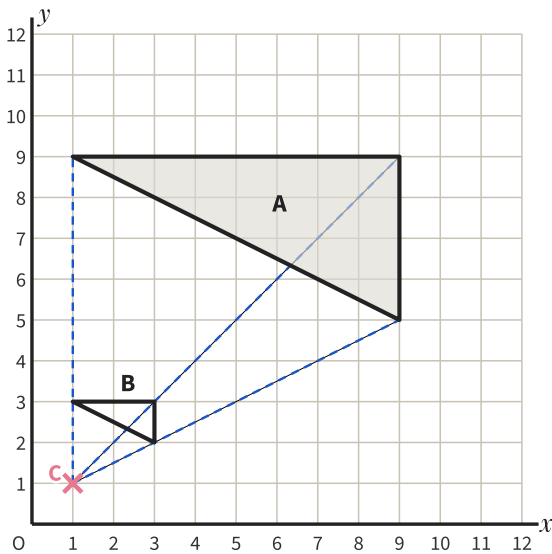
S right 4, up 4 → right 6, up 6 → S' (7, 7)

Enlargement: Integer and Fractional Scale Factors

Factors *further practice*

ANSWERS 

8



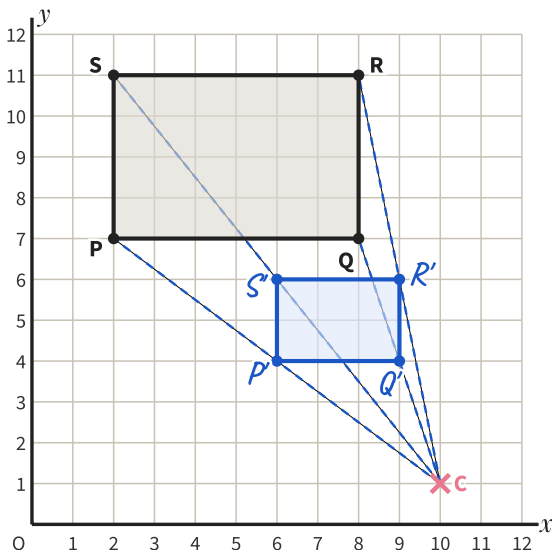
Shape B is an enlargement of shape A with centre C. What is the scale factor?

A is 8 squares wide, B is 2 squares wide

$\frac{1}{4}$

Scale factor _____

9



PQRS is the plan of a rectangular patio. Each square is 1 m.

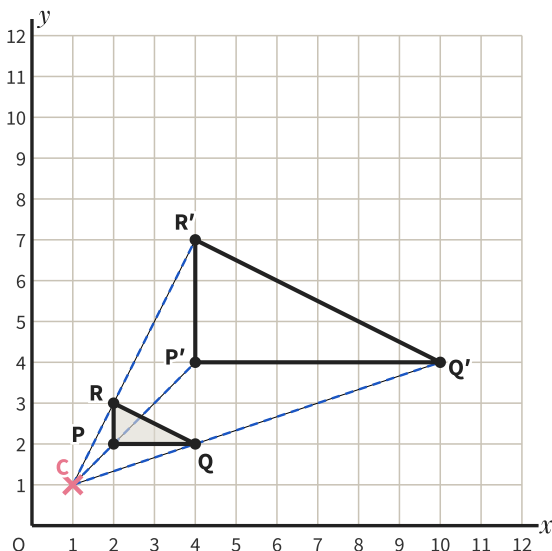
(a) Enlarge PQRS by scale factor $\frac{1}{2}$ about the centre C (10, 1).

(b) Work out the perimeter of PQRS and of the image. What do you notice?

PQRS: 20 m, image: 10 m

The perimeter is halved, like every length.

10



PQR is enlarged by scale factor 3 about C to give P'Q'R'.

Mia says: "Enlarging P'Q'R' by scale factor $\frac{1}{3}$ about C gives

PQR again."

Is Mia right? Explain.

Yes. Every journey from C was multiplied by 3,

then multiplying by $\frac{1}{3}$ takes it back:

$3 \times \frac{1}{3} = 1$, so each corner returns to PQR.