Enlarge Shape by a **scale factor** of $\frac{1}{3}$ using the origin as the **centre of enlargement (C of E).**

1. Mark the C of E on your diagram.

2. Mark a point on your shape.
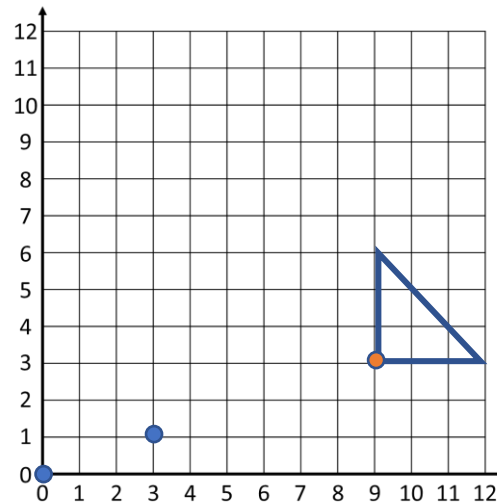
3. Write down the vector which moves the C of E to your chosen point $\begin{pmatrix} 9 \\ 3 \end{pmatrix}$

4. Multiply your vector by the scale factor

$$\frac{1}{3} \times \begin{pmatrix} 9 \\ 3 \end{pmatrix} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$$

5. Apply your vector FROM the C of E

6. Plot new point and draw in rest of shape

Enlarge Shape by a **scale factor** of $\frac{1}{2}$ using (1, 2) as the **centre of enlargement (C of E).**

1. Mark the C of E on your diagram.

2. Mark a point on your shape.
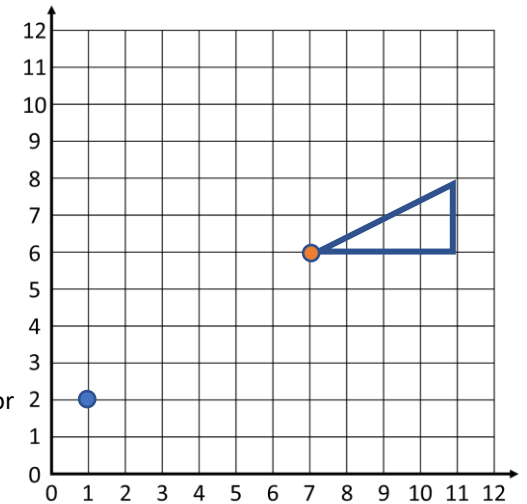
3. Write down the vector which moves the C of E to your chosen point $\begin{pmatrix} 6 \\ 4 \end{pmatrix}$

4. Multiply your vector by the scale factor

$$\frac{1}{2} \times \begin{pmatrix} 6 \\ 4 \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

5. Apply your vector FROM the C of E

6. Plot new point and draw in rest of shape

Enlarge Shape by a **scale factor** of $\frac{1}{2}$ using (11, 11) as the **centre of enlargement (C of E).**

1. Mark the C of E on your diagram.

2. Mark a point on your shape.

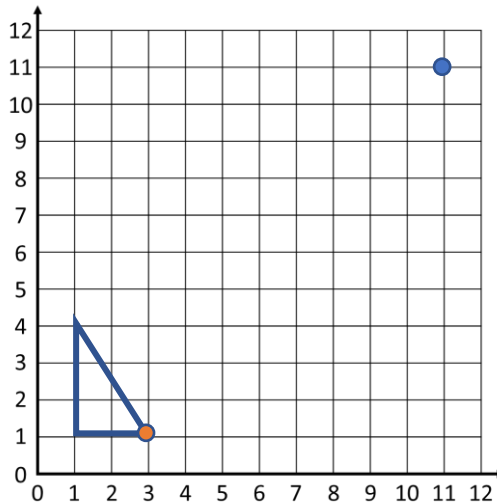3. Write down the vector which moves the C of E to your chosen point $\begin{pmatrix} -8 \\ -10 \end{pmatrix}$

4. Multiply your vector by the scale factor

$$\frac{1}{2} \times \begin{pmatrix} -8 \\ -10 \end{pmatrix} = \begin{pmatrix} \cdots \\ \cdots \end{pmatrix}$$

5. Apply your vector FROM the C of E

6. Plot new point and draw in rest of shape

Enlarge Shape by a **scale factor** of $\frac{2}{3}$ using (12, 10) as the **centre of enlargement (C of E).**

1. Mark the C of E on your diagram.

2. Mark a point on your shape.

3. Write down the vector which moves the C of E to your chosen point $\begin{pmatrix} \cdots \\ \cdots \end{pmatrix}$

4. Multiply your vector by the scale factor

$$\frac{2}{3} \times \begin{pmatrix} \cdots \\ \cdots \end{pmatrix} = \begin{pmatrix} \cdots \\ \cdots \end{pmatrix}$$

5. Apply your vector FROM the C of E

6. Plot new point and draw in rest of shape