JRA Tutors
Private tuition and small online Study Pods

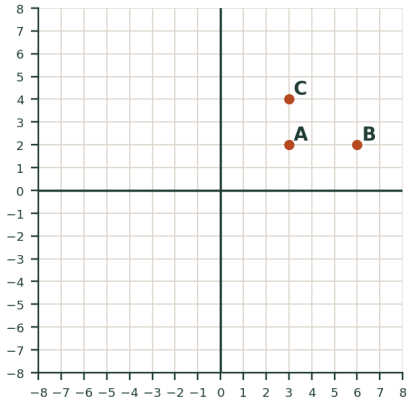
Enlarging with Negative Scale Factors

Grade 6 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (62 marks) build up to the harder Grade 8–9 style questions at the end; aim to complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 83 marks.

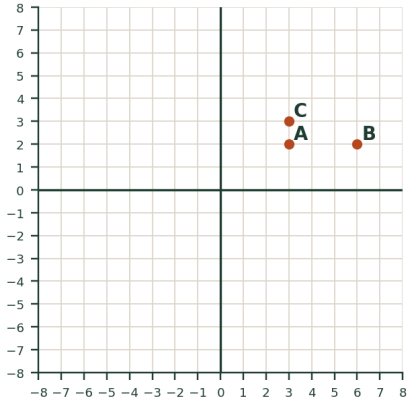
Warm-up

1 Triangle ABC has vertices A(3, 2), B(6, 2) and C(3, 4). It is enlarged by scale factor -2, centre the origin. Write down the coordinates of the image. **[4 marks]**



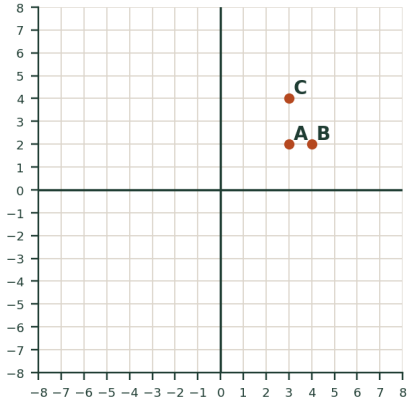
Answer _____

2 Triangle ABC has vertices A(3, 2), B(6, 2) and C(3, 3). It is enlarged by scale factor -1, centre the origin. Write down the coordinates of the image. **[4 marks]**



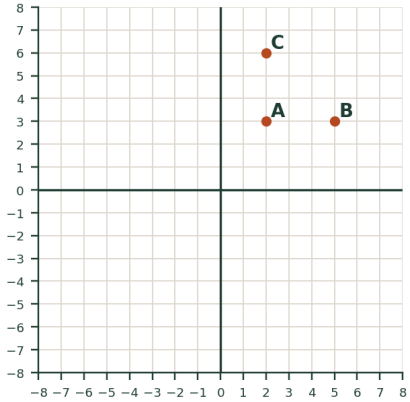
Answer _____

3 Triangle ABC has vertices A(3, 2), B(4, 2) and C(3, 4). It is enlarged by scale factor -1, centre the origin. Write down the coordinates of the image. **[4 marks]**



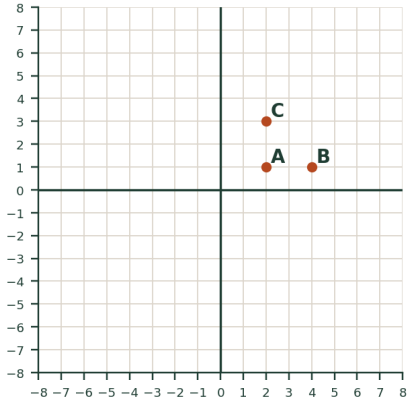
Answer _____

4 Triangle ABC has vertices A(2, 3), B(5, 3) and C(2, 6). It is enlarged by scale factor -1, centre the origin. Write down the coordinates of the image. **[4 marks]**



Answer _____

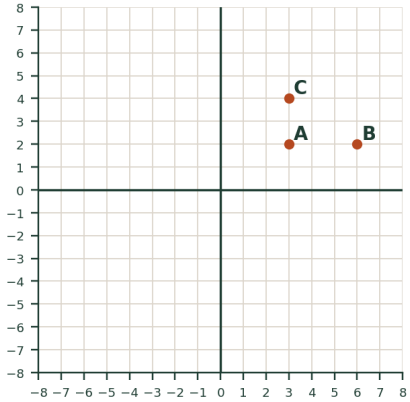
5 Triangle ABC has vertices A(2, 1), B(4, 1) and C(2, 3). It is enlarged by scale factor -2, centre the origin. Write down the coordinates of the image. **[4 marks]**



Answer _____

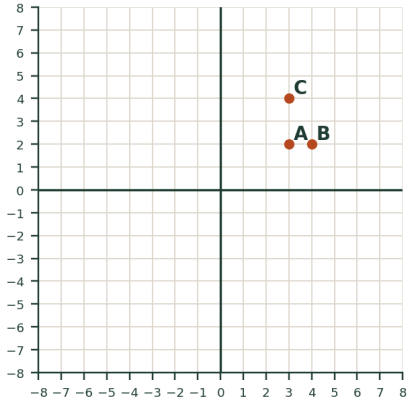
Core

6 Triangle ABC has vertices A(3, 2), B(6, 2) and C(3, 4). It is enlarged by scale factor −1/2, centre (−1, 1). Write down the coordinates of the image. **[5 marks]**



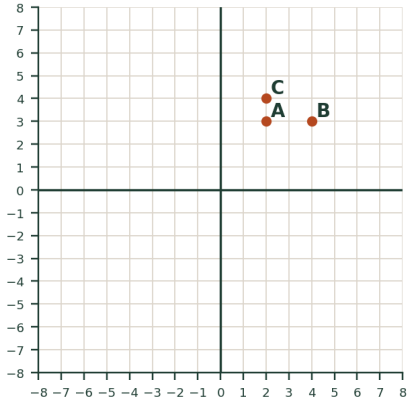
Answer _____

7 Triangle ABC has vertices A(3, 2), B(4, 2) and C(3, 4). It is enlarged by scale factor −3, centre (−1, 1). Write down the coordinates of the image. **[5 marks]**



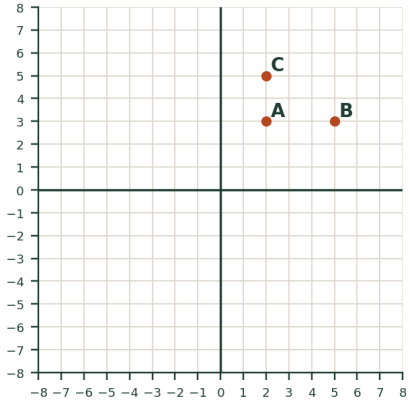
Answer _____

8 Triangle ABC has vertices A(2, 3), B(4, 3) and C(2, 4). It is enlarged by scale factor −3, centre (0, 2). Write down the coordinates of the image. **[5 marks]**



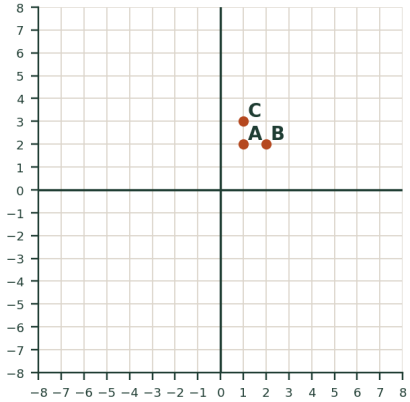
Answer _____

9 Triangle ABC has vertices A(2, 3), B(5, 3) and C(2, 5). It is enlarged by scale factor −1/2, centre (1, 1). Write down the coordinates of the image. **[5 marks]**



Answer _____

10 Triangle ABC has vertices A(1, 2), B(2, 2) and C(1, 3). It is enlarged by scale factor −3, centre (2, 0). Write down the coordinates of the image. **[5 marks]**



Answer _____

Stretch

11 Describe fully the single transformation that maps triangle ABC to triangle A′B′C′ if each side of A′B′C′ is twice as long as ABC but the image is on the opposite side of the centre. **[4 marks]**

Answer _____

12 A shape is enlarged by scale factor −3. How do the lengths and the orientation change? **[3 marks]**

Answer _____

13 The point P(2, 3) is enlarged by scale factor −2 about the origin. Write down P′. **[3 marks]**

Answer _____

14 The point P(3, 1) is enlarged by scale factor −1 about the point (1, 1). Write down P′. **[4 marks]**

Answer _____

15 A triangle with area 6 cm² is enlarged by scale factor −2. Work out the area of the image. **[3 marks]**

Answer _____

Challenge

16 Triangle ABC has vertices A(2, 2), B(4, 2) and C(2, 3). A′ is (−4, −4) after an enlargement about the origin. Find the scale factor. **[5 marks]**

Answer _____

17 A square of side 3 cm is enlarged by scale factor −4. Work out the area of the image. **[4 marks]**

Answer _____

18 P(2, 3) is mapped to P′(−1, 0) by an enlargement with scale factor −1. Find the centre. **[5 marks]**

Answer _____

19 Triangle ABC is enlarged by scale factor −2 with centre (1, 1). A is (2, 2). Find A′. **[4 marks]**

Answer _____

20 Explain the difference between enlargement by scale factor 2 and by scale factor −2. **[3 marks]**

Answer _____