Year 9 Bearings and Transformations – Mixed Practice

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Year 9 · Maths · Bearings, Coordinates and Transformations · Mixed practice · 30 questions

Name _____ **Date** _____

A. Mixed practice (mixed order)

1. The bearing of Q from P is 201°. Find the bearing of P from Q.

Answer _____

2. On a map with a scale of 1 : 25 000, how long is a road that is 2 km long in real life?

Answer _____

3. P is one third of the way along the line segment from A (3, 2) to B (15, 14). Find the coordinates of P.

Answer _____

4. A map has a scale of 1 : 50 000. Two villages are 7.5 cm apart on the map. How far apart are they in real life, in kilometres?

Answer _____

5. Write the direction south-west as a three-figure bearing, then give the bearing of the opposite direction.

Answer _____

6. P is one third of the way along the line segment from A (2, −1) to B (−1, −10). Find the coordinates of P.

Answer _____

7. A plan of a room has a scale of 1 : 200. On the plan the room is 11 cm by 11 cm. Find the real length and width of the room in metres.

Answer _____

8. A square has an area of 36 cm^2. It is enlarged by scale factor 4. Find the side length, perimeter and area of the image.

Answer _____

9. P lies on the line segment from A (−5, −6) to B (10, 4) so that AP : PB = 1 : 4. Find the coordinates of P.

Answer _____

10. The bearing of Q from P is 009°. Find the bearing of P from Q.

Answer _____

11. P is one third of the way along the line segment from A (−6, 3) to B (−3, −6). Find the coordinates of P.

Answer _____

12. A map has a scale of 1 : 100 000. Two villages are 2.4 cm apart on the map. How far apart are they in real life, in kilometres?

Answer _____

13. A hiker walks 7.3 km on a bearing of 302°. On what bearing must she walk to go straight back to her start, and how far?

Answer _____

14. P lies on the line segment from A (−2, 5) to B (−18, −3) so that AP : PB = 3 : 5. Find the coordinates of P.

Answer _____

15. A rectangle 6 cm by 7 cm is enlarged by scale factor 3. Find the perimeter and area of the image. How many times bigger is each?

Answer _____

16. A rectangle has an area of 4 cm^2. It is enlarged by scale factor 2. Ivo says the new area is $2 \times 4 = 8$ cm^2. Explain the mistake and find the new area.

Answer _____

17. The bearing of Q from P is 134°. Find the bearing of P from Q.

Answer _____

18. M (0, −1) is the midpoint of the line segment AB. A is (0, −3). Find the coordinates of B.

Answer _____

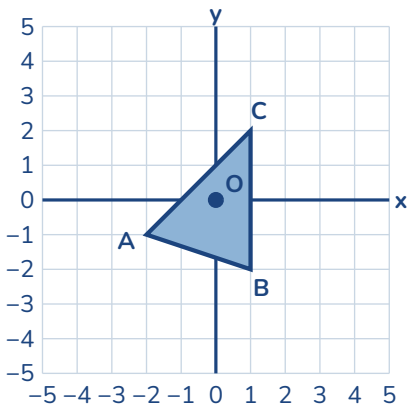
19. A shape S is transformed like this: enlarge it by scale factor 3 about the origin, then rotate it 90° anticlockwise about (1, 0), then translate it by the vector (1, −2), then reflect it in the line y = −1. Is the final image congruent to S? Explain.

Answer _____

20. P is one third of the way along the line segment from A (4, 2) to B (−2, 5). Find the coordinates of P.

Answer _____

21. Enlarge triangle ABC by scale factor 2 with centre O (0, 0). Write the coordinates of A', B' and C'.



22. P lies on the line segment from A (−6, 5) to B (−18, 9) so that AP : PB = 1 : 3. Find the coordinates of P.

Answer _____

23. Eli says a reflection followed by a rotation always gives an image congruent to the object. Is Eli right? Explain.

Answer _____

24. A rectangle 4 cm wide has an area of 28 cm^2. After an enlargement its area is 700 cm^2. What is the scale factor, and how wide is the image?

Answer _____

25. P divides the line segment from A (−1, −5) to B (−13, 7) so that AP : PB = 1 : 3. Eli goes one third of the way from A and gets (−5, −1). Explain the mistake and find P.

Answer _____

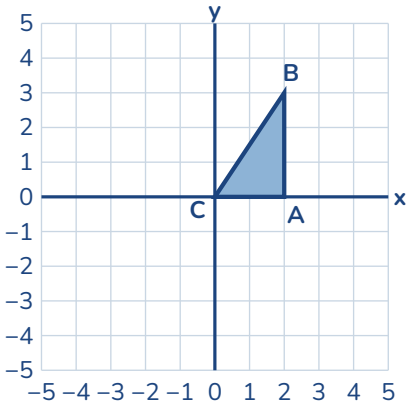
26. In an orienteering race the map scale is 1 : 10 000. The next control point is 6.4 cm away on the map. How far is it on the ground, in metres?

Answer _____

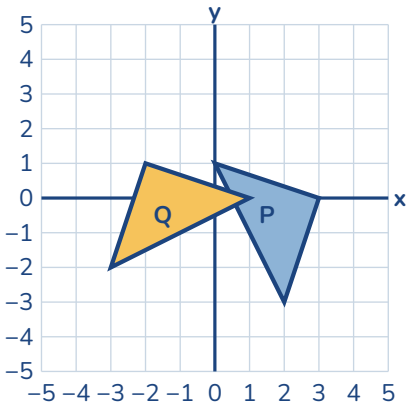
27. The bearing of Q from P is 116°. Find the bearing of P from Q.

Answer _____

28. Take triangle ABC. First rotate it 90° anticlockwise about the origin, then rotate it 90° anticlockwise about (−1, 1). Write the coordinates of the final image of A, B and C.



29. Triangle P has corners (3, 0), (2, −3), (0, 1). Triangle Q has corners (−2, 1), (1, 0), (−3, −2), in the same order. Describe fully the single transformation that maps P onto Q.



Answer _____

30. A plan of a room has a scale of 1 : 200. On the plan the room is 7 cm by 12 cm. Find the real length and width of the room in metres.

Answer _____