Year 8 Bearings and Transformations – Mixed Practice

ANSWER KEY HappyKids.fit

Answers and worked solutions · 30 questions

A. Mixed practice (mixed order)

1. **(3, −2)**

((6 + 0) ÷ 2, (2 + −6) ÷ 2) = (3, −2)

2. **(−2, 1)**

Changes in x and y: 0 − (2) = −2, 0 − (−1) = 1

3. **215°**

The back bearing differs by 180°: 35 + 180 = 215°

4. **(1, −6)**

((−6 + 8) ÷ 2, (−8 + −4) ÷ 2) = (1, −6)

5. **(−4, 6)**

Changes in x and y: −8 − (−4) = −4, 12 − (6) = 6

6. **(7, 3)**

((8 + 6) ÷ 2, (5 + 1) ÷ 2) = (7, 3)

7. **(2, 5)**

Add the vector: (5 + (−3), −1 + 6) = (2, 5)

8. **135°**

The back bearing differs by 180°: 315 − 180 = 135°

9. **(−1, 1)**

Changes in x and y: 5 − (6) = −1, 5 − (4) = 1

10. **055°**

The back bearing differs by 180°: 235 − 180 = 055°

11. **(−6.5, 0)**

((−7 + −6) ÷ 2, (−5 + 5) ÷ 2) = (−6.5, 0)

12. **(2, 4)**

Add the vector: (3 + (−1), 0 + 4) = (2, 4)

13. **121°**

Bearings are measured clockwise from north, with three figures
South is 180°; B is 59° before south
180 − 59 = 121°

14. **130°**

The back bearing differs by 180°: 310 − 180 = 130°

15. (1, 4.5)

((−2 + 4) ÷ 2, (4 + 5) ÷ 2) = (1, 4.5)

16. 250°

The back bearing differs by 180°: 70 + 180 = 250°

17. Bearings are less than 360°, so subtract 180° instead: 040°.

Error: a bearing cannot be more than 360°
The back bearing differs by 180°
220 − 180 = 040°

18. (1, −6)

Changes in x and y: 2 − (1) = 1, −11 − (−5) = −6

19. (−0.5, −2.5)

((−2 + 1) ÷ 2, (−2 + −3) ÷ 2) = (−0.5, −2.5)

20. 139°

Bearings are measured clockwise from north, with three figures
South is 180°; B is 41° before south
180 − 41 = 139°

21. (−1, −5.5)

((−3 + 1) ÷ 2, (−4 + −7) ÷ 2) = (−1, −5.5)

22. The midpoint is the mean of the coordinates: add, then halve. Midpoint = (−1.5, 1.5).

Error: the coordinates were subtracted
Add the x-coordinates and halve; add the y-coordinates and halve
= (−1.5, 1.5)

23. a reflection in the line y = x

(2, 3) → (3, 2), (2, 1) → (1, 2), (3, 1) → (1, 3)
Look at how the coordinates change: a reflection in the line y = x
Check: the image is the same shape and size (congruent)

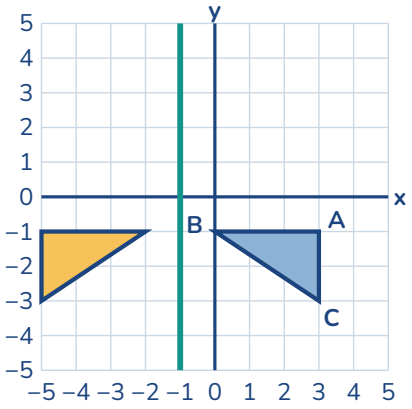
24. Yes. For example (2, 5) → (5, 2): the line y = x is the mirror for swapping x and y.

Try an example
For example (2, 5) → (5, 2): the line y = x is the mirror for swapping x and y.
Decide

25. **A' (−5, −1), B' (−2, −1), C' (−5, −3)**

Each image point is the same distance from x = −1 on the other side

A (3, −1) → (−5, −1), B (0, −1) → (−2, −1), C (3, −3) → (−5, −3)



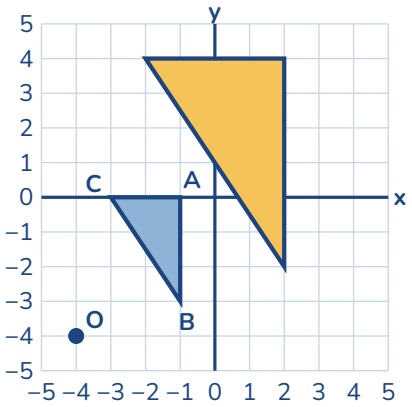
26. **(−5, −5)**

Add the vector: (−3 + (−2), −3 + (−2)) = (−5, −5)

27. **A' (2, 4), B' (2, −2), C' (−2, 4)**

Multiply the distance from O to each corner by 2

A (−1, 0) → (2, 4), B (−1, −3) → (2, −2), C (−3, 0) → (−2, 4)



28. **320°**

The back bearing differs by 180°: 140 + 180 = 320°

29. **155°**

Bearings are measured clockwise from north, with three figures

South is 180°; B is 25° before south

180 − 25 = 155°

30. **A' (0, 0), B' (0, −3), C' (−2, 0)**

You need the centre, the angle and the direction; tracing paper helps

A (−1, −3) → (0, 0), B (−4, −3) → (0, −3), C (−1, −1) → (−2, 0)

