Unit 18 · Coordinate Geometry

HARDER PRACTICE QUESTIONS · ANSWER KEY

Full marks 29

Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Where is each point?

ANSWER U · 3

i. A: **2nd quadrant** (−, +). B: **4th quadrant** (+, −). C: **3rd quadrant** (−, −).

ii. D: x-coordinate 0, so **on the Y-axis**, below the origin. E: y-coordinate 0, so **on the X-axis**, left of the origin.

iii. (−, +): the **2nd quadrant**.

MARKING SCHEME

✓ A, B and C right.

✓ D on the Y-axis and E on the X-axis.

✓ The 2nd quadrant.

2 Spot the error

ANSWER U · 3

i. The x-coordinate comes first and is **across** (right or left); the y-coordinate is **up** or down. She swapped them.

ii. She plotted **(5, 2)**.

iii. **Yes**: any point whose two coordinates are equal, such as **(3, 3)** or **(−2, −2)** (or the origin).

MARKING SCHEME

✓ Across first, then up.

✓ (5, 2).

✓ Equal coordinates, two examples.

3 The fourth corner

ANSWER A · 4

i. D is below A and level with C: D**(−3, −2)**.

ii. AB runs from x = −3 to x = 5: **8 units**. BC runs from y = 4 to y = −2: **6 units**.

iii. $2(8 + 6) =$ **28 units**.

iv. $8 \times 6 =$ **48 square units**.

MARKING SCHEME

✓ D(−3, −2).

✓ 8 units and 6 units.

✓ 28 units.

✓ 48 square units.

4 Join them up

ANSWER A · 3

i. Each side is as long as 5 squares: four equal sides make a **rhombus**. (Its corners are not right angles, so it is not a square.)

ii. The box round it is 8 units by 6: 48 square units. Each of its four corners outside PQRS is half of a 4 by 3 rectangle: 6 square units. Area $= 48 - 4 \times 6 =$ **24 square units**.

MARKING SCHEME

✓ A rhombus, four equal sides.

✓ The box, 48 square units, and the corners, 4×6.

✓ 24 square units.

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5 Steps on the grid

ANSWER A · 3

i. From x = 2, 5 units left reaches x = −3. From y = −3, 4 units up reaches y = 1. He ends at **(−3, 1)**.
ii. He starts in the **4th quadrant** (+, −) and ends in the **2nd quadrant** (−, +).
iii. **3 units to the right**, to (0, 1).

MARKING SCHEME

✓ (−3, 1).
✓ 4th, then 2nd quadrant.
✓ 3 units right, to (0, 1).

6 A pattern of points

ANSWER A · 3

i. They lie on **one straight line** that goes up through the origin, 2 up for every 1 across.
ii. **(5, 10)** and **(6, 12)**.
iii. Each y-coordinate is **twice** the x-coordinate. **(7, 14)** is: 2 × 7 = 14. **(9, 16) is not**: 2 × 9 = 18.

MARKING SCHEME

✓ On one straight line.
✓ (5, 10) and (6, 12).
✓ y is twice x, so (7, 14) yes and (9, 16) no.

7 Two corners of a square

ANSWER HA · 3

i. The side is 3 units long, so the other corners are 3 units above or 3 units below it: **(4, 4) and (1, 4)**, the square above, or **(4, −2) and (1, −2)**, the square below.
ii. 3 × 3 = **9 square units** either way.

MARKING SCHEME

✓ The square above: (4, 4) and (1, 4).
✓ The square below: (4, −2) and (1, −2).
✓ 9 square units.

8 Make your own

ANSWER A · 3

For example, an arrow: **(−4, 2), (2, 2), (5, 0), (2, −2), (−4, −2), (−2, 0), back to (−4, 2)**. (−4, 2) is in the 2nd quadrant, (2, 2) in the 1st, (2, −2) in the 4th and (−4, −2) in the 3rd.
Any picture is right if its points are written as (x, y), in the order to join them, and at least one corner is in each quadrant.

MARKING SCHEME

✓ A picture with its corners as ordered pairs.
✓ The order of joining given.
✓ A corner in each of the four quadrants.

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9 Think: three and five

ANSWER HA · 4

i. **(5, 3), (−5, 3), (−5, −3) and (5, −3)**.
ii. 1st, 2nd, 3rd and 4th quadrant: **one in each**.
iii. Below the X-axis (y below zero) and right of the Y-axis (x above zero): **(5, −3)**, in the 4th quadrant.
iv. A **rectangle** 10 units by 6 units, with the origin in its middle: $10 \times 6 = $ **60 square units**.

MARKING SCHEME

- ✓ All four points.
- ✓ One in each quadrant.
- ✓ (5, −3).
- ✓ A rectangle of 60 square units.

See it at Science Playground

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- **The Unit Circle** (exhibit): The small diagram in the corner names the four quadrants, I to IV. Read where the circle meets the axes: (1, 0), (0, 1), (−1, 0), (0, −1).

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	0	6	16	7	**29**

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