Unit 17 · Coordinates

HARDER PRACTICE QUESTIONS · ANSWER KEY

Full marks 35

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

1 Spot the errors

ANSWER U · 4

i. It is **on the X-axis**, in no quadrant: its y-coordinate is 0.

ii. **5 units.** $-1-(-6)=-1+6=5$. She dropped the minus sign of -6, and a distance is never negative.

iii. **(2, −5).** Across comes first: 2 right is $x=2$, and 5 down is $y=-5$.

iv. **Different points.** (2, 3) is 2 across and 3 up; (3, 2) is 3 across and 2 up.

MARKING SCHEME

✓ i. On the X-axis, in no quadrant.

✓ ii. 5 units.

✓ iii. (2, −5).

✓ iv. Different points: the order matters.

2 Signs and quadrants

ANSWER A · 4

i. Right and down: the **4th quadrant**.

ii. In the 2nd quadrant a is negative and b positive. So Q has a positive x and a negative y: the **4th quadrant**.

iii. a is negative and $-b$ is negative: the **3rd quadrant**.

iv. **On the Y-axis**, the line up and down through the origin.

MARKING SCHEME

✓ i. 4th quadrant.

✓ ii. 4th quadrant.

✓ iii. 3rd quadrant.

✓ iv. On the Y-axis.

3 The classroom plan

ANSWER A · 4

i. D is straight above A and level with C: D**(−4, 3)**.

ii. $AB=5-(-4)=$ **9 m**; $BC=3-(-3)=$ **6 m**.

iii. Perimeter $2(9+6)=$ **30 m**; area $9\times 6=$ **54 m²**.

iv. **Not quite.** Across, the floor runs from −4 to 5, so its middle is at $x=0.5$; up and down, from −3 to 3, so $y=0$. The middle is **(0.5, 0)**, half a meter right of the origin.

MARKING SCHEME

✓ i. $D(-4, 3)$.

✓ ii. 9 m and 6 m.

✓ iii. 30 m and 54 m^2.

✓ iv. No: the middle is (0.5, 0).

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4 Points on a line

ANSWER A · 4

i. $4 - (-6) =$ **10 units**.
ii. 5 units from each: $-6 + 5 = -1$, so **(−1, 3)**.
iii. The 10 units are cut into 4 parts and 1 part: 8 from A and 2 from B. $-6 + 8 = 2$: **(2, 3)**.
iv. Two points: 4 up, **(2, 3)**, and 4 down, **(2, −5)**.

MARKING SCHEME

✓ i. 10 units.
✓ ii. (−1, 3).
✓ iii. (2, 3).
✓ iv. (2, 3) and (2, −5).

5 A shape round the origin

ANSWER A · 4

i. $AC = 3 - (-3) =$ **6 units**; $BD = 4 - (-4) =$ **8 units**.
ii. At the **origin**, at a **right angle** (they lie along the axes). **Yes**: $OA = OC = 3$ and $OB = OD = 4$.
iii. $AB^2 = 3^2 + 4^2 = 25$, so $AB =$ **5 units**.
iv. **Yes**: each side is the hypotenuse of a right triangle with sides 3 and 4 at O, so each is 5 units.

MARKING SCHEME

✓ i. 6 and 8 units.
✓ ii. At the origin, at right angles, bisecting each other.
✓ iii. $AB = 5$.
✓ iv. All four sides 5 units.

6 The walk

ANSWER A · 4

i. **(−1, −1)**, **(−1, 4)**, **(−7, 4)**, **(−7, 2)**.
ii. x negative, y positive: the **2nd quadrant**.
iii. $3 + 5 + 6 + 2 =$ **16 units**.
iv. From $x = -7$ to -4 is **3 right**, and from $y = 2$ to -1 is **3 down**.

MARKING SCHEME

✓ i. The four points.
✓ ii. 2nd quadrant.
✓ iii. 16 units.
✓ iv. 3 right, 3 down.

7 An L-shaped plot

ANSWER A · 4

i. **9, 4, 4, 3, 5 and 7 m**: $5 - (-4) = 9$; $1 - (-3) = 4$; $5 - 1 = 4$; $4 - 1 = 3$; $1 - (-4) = 5$; $4 - (-3) = 7$.
ii. $9 + 4 + 4 + 3 + 5 + 7 =$ **32 m**.
iii. The bottom rectangle from $x = -4$ to 5 and $y = -3$ to 1 is $9 \times 4 = 36$ m^2; the top one from $x = -4$ to 1 and $y = 1$ to 4 is $5 \times 3 = 15$ m^2. Area **51 m^2**.
iv. 4 m: $4 \times 1500 =$ **Rs 6,000**.

MARKING SCHEME

✓ i. The six sides.
✓ ii. 32 m.
✓ iii. 51 m^2.
✓ iv. Rs 6,000.

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8 Think: three steps from the origin

ANSWER HA · 4

i. **(3, 0), (−3, 0), (0, 3), (0, −3)**.

ii. **(1, 2) and (2, 1)**: 1 across and 2 up, or 2 across and 1 up. **2 in each quadrant**.

iii. $4 + 4 \times 2 = $ **12 points**. Joined round, they make a **square standing on a corner**, its corners on the axes.

iv. 4 on the axes, and (1, 4), (2, 3), (3, 2), (4, 1) in each quadrant: $4 + 4 \times 4 = $ **20 points**. (For any number n, $4n$ points.)

MARKING SCHEME

✓ i. The four points on the axes.

✓ ii. (1, 2), (2, 1): 2 in each quadrant.

✓ iii. 12 points, a square on its corner.

✓ iv. 20 points.

9 Make your own

ANSWER A · 3

For example:

i. (−2, 3), (4, 3), (4, −1); the fourth is (−2, −1).

ii. (2, 4) and (2, −3): $4 - (-3) = 7$.

iii. **(3, 0), (−3, 0), (0, 3), (0, −3)**: exactly these four.

Any correct answers are right in i and ii.

MARKING SCHEME

✓ i. A rectangle with three corners in different quadrants, and the fourth.

✓ ii. Two points 7 apart, in the 1st and 4th quadrants.

✓ iii. The four points on the axes.

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- **The Unit Circle** (exhibit): The circle meets the axes at (1, 0), (0, 1), (−1, 0) and (0, −1). The corner diagram shows the signs: left of the Y-axis x is negative, below the X-axis y is.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	0	4	27	4	**35**

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