WONDERLEARNERZ PRIMARY ACADEMY â€" OFFICIAL ANSWER KEY & MARKING SCHEME

Spatial Awareness and Directions - Worksheet 1 [ANSWER KEY]

Grade 3 | Mathematics | Ch 2: Spatial Awareness and Directions | Total Marks: 19 | Time: 30 Minutes

Q1. Which cardinal direction is directly opposite to West on a standard compass rose? [1 Mark]

Correct Answer: East

Explanation: East is directly opposite West.

Q2. If you are facing North and make a 90Â° quarter turn clockwise, which direction do [1 Mark]
you face?

Correct Answer: East

Explanation: A quarter turn clockwise from North faces East.

Q3. On a coordinate map, a rover starts at (1, 1) and travels 4 units East and 3 units [1 Mark]
North. What is the rover's final coordinate?

Correct Answer: (5, 4)

Explanation: Horizontal: 1 + 4 = 5. Vertical: 1 + 3 = 4. Coordinate is (5, 4).

Q4. How many quarter turns (90Â°) are in one complete full turn (360Â°)? [1 Mark]

Correct Answer: 4 quarter turns

Explanation: 360Â° / 90Â° = 4 quarter turns make one full rotation.

Q5. At the Botanical Garden Maze, a guide walks 4 blocks East, then 3 blocks North, [1 Mark]
and finally 2 blocks West. What is the guide's net horizontal distance from start?

Correct Answer: 2 blocks East

Explanation: 4 East minus 2 West = 2 blocks East.

Q6. A delivery van starts at warehouse (0, 0) and makes 3 drops: (2, 0), then (2, 4), [1 Mark]
then (5, 4). If each grid unit is 1 km, what total driving distance did the van cover?

Correct Answer: 9 km

Explanation: From (0,0) to (2,0) is 2 km. From (2,0) to (2,4) is 4 km. From (2,4) to (5,4) is 3 km. 2 + 4 + 3 = 9 km.

Q7. A hiker on the Botanical Garden Maze is facing South. After making a half turn [1 Mark]
(180Â°), which direction are they facing, and which way should they turn 90Â° to face West?

Correct Answer: Facing North; turn counter-clockwise 90Â° to face West

Explanation: A half turn from South faces North. From North, a 90Â° counter-clockwise (left) turn faces West.

Q8. A treasure chest is buried at grid location (8, 6). A pirate starts at (4, 3). How [1 Mark]
many blocks East and North must the pirate walk?

Correct Answer: 4 blocks East and 3 blocks North

Explanation: East: (8) - 4 = 4 blocks. North: (6) - 3 = 3 blocks.

Q9. Find the missing turn: 'Facing North, turn quarter turn clockwise (face East), [1 Mark]
then turn [?] to face South.'

Correct Answer: Quarter turn clockwise (90Â°)

Explanation: From East, a 90Â° clockwise turn faces South.

Q10. Kiran reads a treasure map and records location (4, 7) as 'Row 4, Column 7'. What [1 Mark]
is Kiran's error?

Correct Answer: In coordinate notation (x, y), the first number is the horizontal column (x = 4) and the second is the vertical row (y = 7)

Explanation: Standard Cartesian coordinates list horizontal (column / x) before vertical (row / y).

Q11. A student says: 'If I am facing East and make two quarter turns clockwise, I will be facing North.' What direction will the student actually face? [1 Mark]

Correct Answer: West

Explanation: Two quarter turns clockwise = 180Â° half turn. The opposite of East is West.

Q12. Why are compass directions (N, S, E, W) universally preferred over 'left' and 'right' when giving long-distance directions on maps? [2 Marks]

Correct Answer: Compass directions are absolute and unchanging regardless of which way a person faces, whereas 'left' and 'right' change depending on your body's orientation

Explanation: Cardinal directions provide invariant reference frames independent of the traveler's momentary viewpoint.

Q13. If you walk in a closed square loop: 10 meters North, 10 meters East, 10 meters South, and 10 meters West, where do you end up? [2 Marks]

Correct Answer: Exactly at your original starting point

Explanation: The North and South movements cancel each other (10 - 10 = 0), and East and West cancel each other (10 - 10 = 0).

Q14. A search rescue drone patrols a perimeter grid. It flies from (2, 2) to (6, 2), then to (6, 5), then to (2, 5), and returns to (2, 2). What is the total perimeter distance flown? [2 Marks]

Correct Answer: 14 units

Explanation: Perimeter of rectangle = 2 x (length + width) = 2 x (4 + 3) = 14 units.

Q15. A robot faces North. It executes 5 successive quarter turns clockwise. In which direction is it facing at the end? [2 Marks]

Correct Answer: East

Explanation: 4 quarter turns = 360Â° (back to North). The 5th quarter turn faces East.