

Foundation GCSE: Horizontal and Vertical Graphs

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Write down the equation of the horizontal line that passes through the point $(3, 5)$.
2. Write down the equation of the vertical line that passes through the point $(-2, 4)$.
3. State the coordinates of the y -intercept of the line $x = -4$.
4. Does the point $(5, -2)$ lie on the vertical line $x = 5$? Explain briefly.
5. Write down the equation of the x -axis as a straight-line graph.
6. Write down the equation of the y -axis as a straight-line graph.
7. Find the coordinates of the intersection point of the lines $x = 3$ and $y = -2$.
8. A line is parallel to the y -axis and passes through $(7, -1)$. Write its equation.
9. A line is parallel to the x -axis and passes through $(-3, -6)$. Write its equation.
10. Calculate the area of the rectangle bounded by the lines $x = 1$, $x = 5$, $y = 2$, and $y = 6$.
11. Find the perimeter of the rectangle bounded by the lines $x = -2$, $x = 3$, $y = 1$, and $y = 7$.
12. Write down the inequalities that define the region bounded by $x = 0$, $x = 4$, $y = 0$, and $y = 3$.
13. Find the coordinates where the line $x = -5$ intersects the line $y = 4$.
14. A square has opposite sides on the lines $y = 2$ and $y = 7$. Find its side length and area.
15. The lines $x = a$ and $y = b$ intersect at $(-3, 8)$. State the values of a and b .
16. Calculate the distance between the vertical lines $x = -3$ and $x = 4$.
17. Calculate the distance between the horizontal lines $y = -5$ and $y = 3$.
18. Find the area of the rectangular region bounded by $x = -2$, $x = 3$, $y = -1$, and $y = 4$.
19. Write down the equations of the four lines that form a square with vertices at $(1, 1)$, $(5, 1)$, $(5, 5)$, and $(1, 5)$.
20. A particle moves along the line $y = 4$ from $x = -2$ to $x = 5$. Calculate the total distance travelled.

Answers & Worked Solutions

1. $y = 5$ – All points on a horizontal line share the same y -coordinate.
2. $x = -2$ – All points on a vertical line share the same x -coordinate.
3. None ($x = -4$ is parallel to the y -axis and never intersects it).
4. Yes – The x -coordinate of the point is 5, which satisfies $x = 5$.
5. $y = 0$ – The y -coordinate is zero everywhere on the x -axis.
6. $x = 0$ – The x -coordinate is zero everywhere on the y -axis.
7. $(3, -2)$ – Intersection of $x = 3$ and $y = -2$.
8. $x = 7$ – Vertical line passing through $x = 7$.
9. $y = -6$ – Horizontal line passing through $y = -6$.
10. 16 – Width $= 5 - 1 = 4$, Height $= 6 - 2 = 4$, Area $= 4 \times 4 = 16$.
11. 22 – Width $= 3 - (-2) = 5$, Height $= 7 - 1 = 6$, Perimeter $= 2(5 + 6) = 22$.
12. $0 \leq x \leq 4$ and $0 \leq y \leq 3$.
13. $(-5, 4)$ – Intersection of $x = -5$ and $y = 4$.
14. Side length $= 5$, Area $= 25$ – Height difference $7 - 2 = 5$.
15. $a = -3$, $b = 8$ – Intersection coordinates directly give $x = a$ and $y = b$.
16. 7 – Distance $= 4 - (-3) = 7$.
17. 8 – Distance $= 3 - (-5) = 8$.
18. 25 – Width $= 3 - (-2) = 5$, Height $= 4 - (-1) = 5$, Area $= 5 \times 5 = 25$.
19. $x = 1$, $x = 5$, $y = 1$, and $y = 5$ – Boundaries of the square.
20. 7 – Distance $= 5 - (-2) = 7$ units.