Solving Problems with Vertical and Horizontal Lines and Their Equations **Answers**

1. Give the coordinates of the point of intersection of the lines with equations $y = 4$ and $x = 2$.

   (2,4)

2. Give the coordinates of the point of intersection of the lines with equations $x = -3$ and $y = 4$.

   (-3,4)

3. What are the coordinates of the 4 points of intersection between: the line with equation $x = 3$, the line with equation $y = -2$, the x-axis and the y-axis?

   (3,-2),(3,0),(0,0),(0,-2)

4. a. What are the coordinates of the 4 points of intersection between: the line with equation $x = -6$, the line with equation $y = 3$, the x-axis and the y-axis?

   (-6,3),(-6,0),(0,0),(0,3)

   b. What is the area of the rectangle bounded by these 4 lines?

   18 square units

   What are the coordinates of the point where the diagonals of this rectangle intersect?

   (-3,1.5)

5. a. What are the coordinates of the 4 points of intersection between: the line with equation $x = 2$, the line with equation $y = -1$, the x-axis and the y-axis?

   (2,-1),(2,0),(0,-1),(0,0)

   b. What is the area of the rectangle bounded by these 4 lines?

   2 square units

   c. What are the coordinates of the point where the diagonals of this rectangle intersect?

   (1,-0.5)

   d. What are the equations of the lines of symmetry of this rectangle?

   $x = 1$, $y = -0.5$

6. The point (2,0) is one the points of intersection between: the line with equation x = k, the line with equation y = 4, the x-axis and the y-axis.
   a. What are the coordinates of the other points of intersection?

   (0,0),(0,4),(2,4)

   b. What is the area of the rectangle bounded by these 4 lines?

   8 square units

   c. What are the coordinates of the point where the diagonals of this rectangle intersect?

   (1,2)

   d. What are the equations of the lines of symmetry of this rectangle?

   ***x* = 1, *y* = 2**

7. The equations of the lines of symmetry of a rectangle are y = 2 and x = −1. The rectangle has a vertex at (4,3). What are the equations of the lines which form the sides of the rectangle?

   ***x* = 4, *y* = 3, *x* = −6, *y* = 1**

8. A rectangle has vertices at (5,4) and (−1,−1). Its sides are horizontal and vertical.
   a. What are the equations of the lines which form its sides?

   ***x* = 5, *y* = 4, *x* = −1, *y* = −1**

   b. What is its area?

   30 square units

   c. How many points are there within the rectangle (not including those on the edge of the rectangle), which have whole number coordinates, e.g. (1,2) but not (1,1.5)?

   20

   d. Issy picks one of these points at random. What is the probability that she picks a point at which the coordinates are both even numbers?

   $\frac{6}{20} = \frac{3}{10}$

9. The ratio of the length to the width of a rectangle is 3:2. The width at the top of the shape extends from (−2,5) to (4,5). What are the equations of the lines which form its sides?
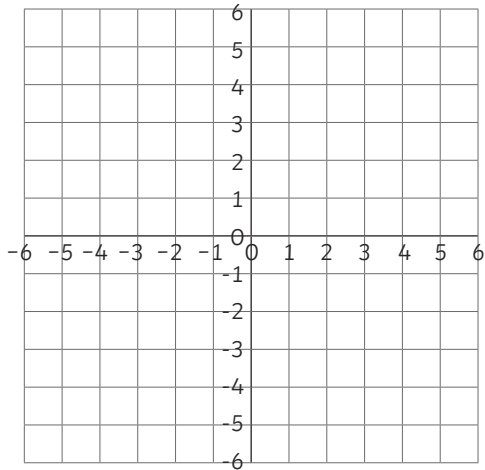
   ***x* = −2, *x* = 4 and *y* = 5, *y* = −4**

10. A rectangle's diagonals intersect at the point (2,−1). It has a vertex at (4,3) and its sides are made up of vertical and horizontal lines. What are the equations of the lines which make up its sides?
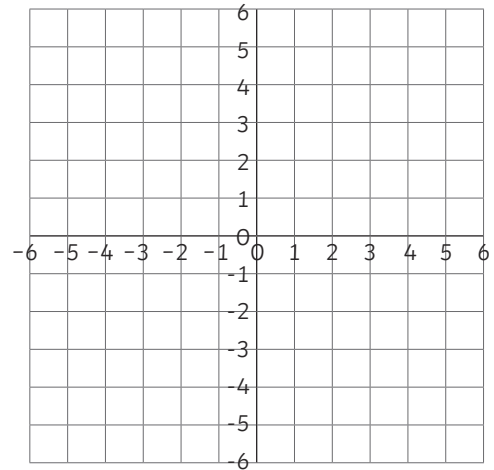
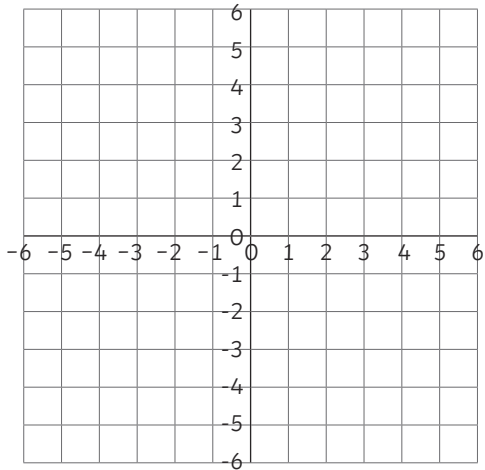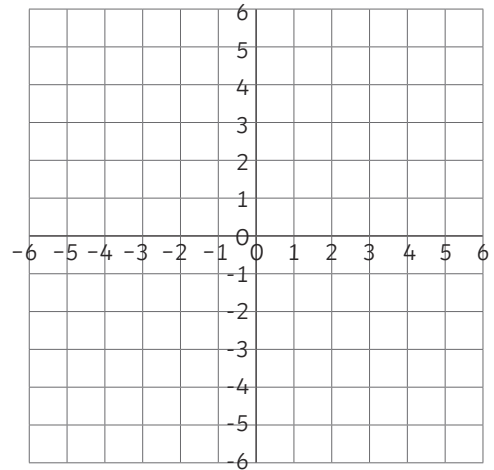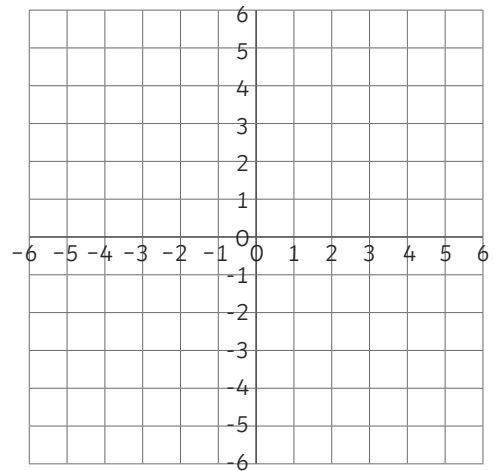   ***x* = 4, *y* = 3 and *x* = 0, *y* = −5**

Coordinate Grids

1.

2.

3.

4.

5.
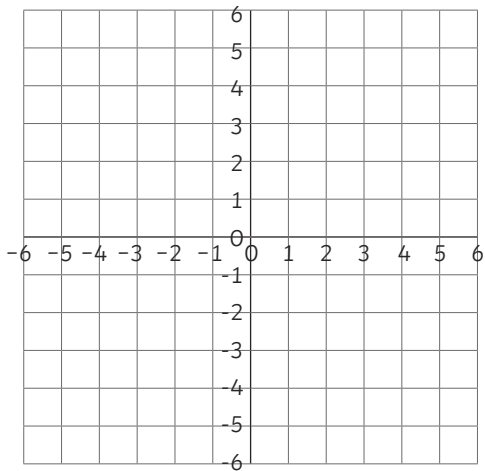
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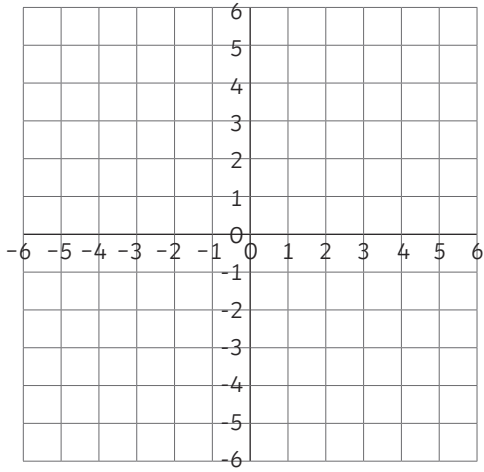
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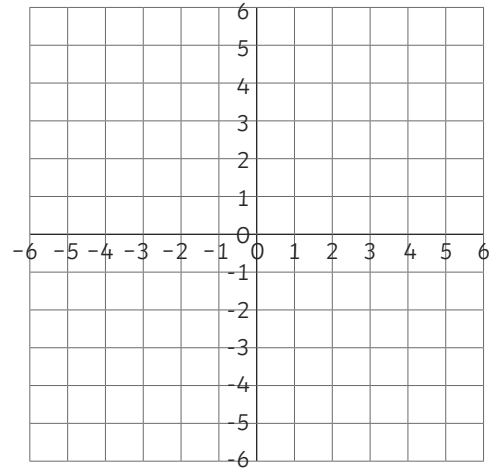
9.

10.

Solving Problems with Vertical and Horizontal Lines and Their Equations

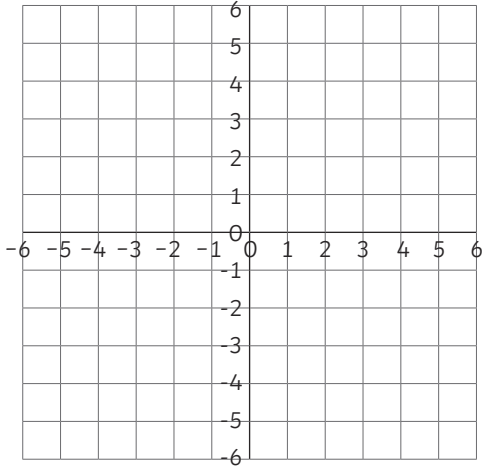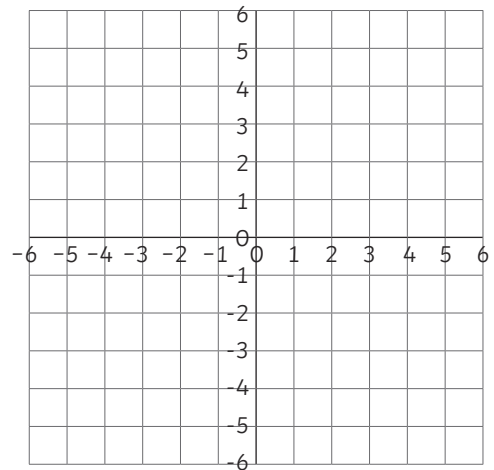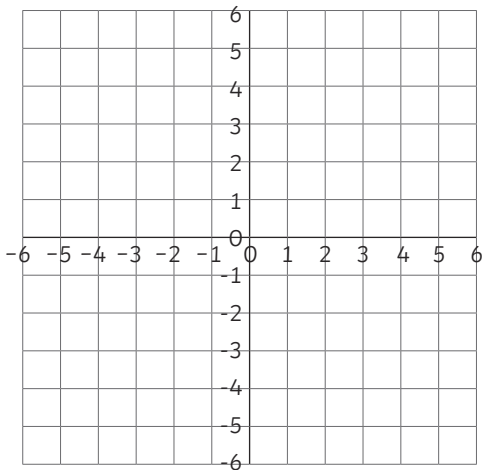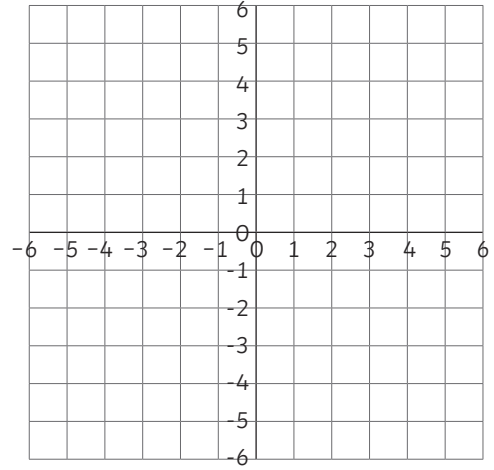1. Give the coordinates of the point of intersection of the lines with equations $y = 4$ and $x = 2$.

   _____

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   _____

4. a. What are the coordinates of the 4 points of intersection between: the line with equation $x = -6$, the line with equation $y = 3$, the x-axis and the y-axis?

   _____

   b. What is the area of the rectangle bounded by these 4 lines?

   _____

   What are the coordinates of the point where the diagonals of this rectangle intersect?

   _____

5. a. What are the coordinates of the 4 points of intersection between: the line with equation $x = 2$, the line with equation $y = -1$, the x-axis and the y-axis?

   _____

   b. What is the area of the rectangle bounded by these 4 lines?

   _____

   c. What are the coordinates of the point where the diagonals of this rectangle intersect?

   _____

   d. What are the equations of the lines of symmetry of this rectangle?

   _____

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    _____

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    c. What are the coordinates of the point where the diagonals of this rectangle intersect?

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    _____

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    _____