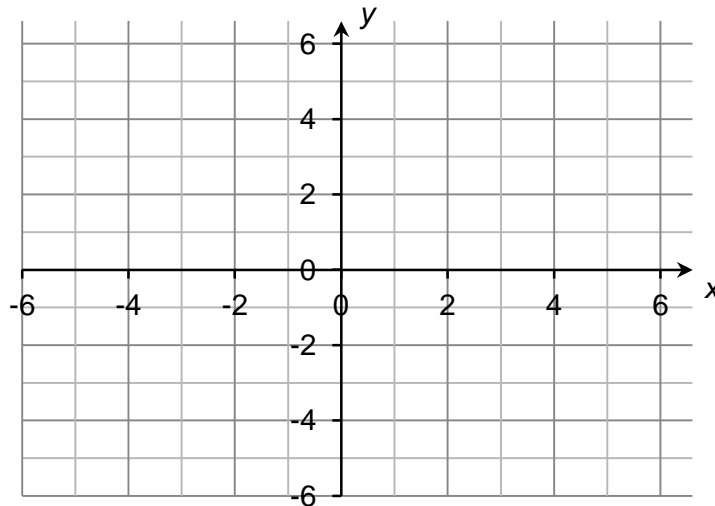


Foundation Check In - 7.02 Straight line graphs

1. Sketch the graph of $y = 3x - 5$ on the grid.



2. The point $(p, 0)$ lies on the line with equation $y = 4x + 3$. Write down the value of p .
3. Which of the following lines are parallel to $3x - 6y = -4$?
- $y = -2x + 1$ $y = \frac{1}{2}x + 2$ $y = \frac{9}{2} - \frac{1}{2}x$ $2y = x + 3$
4. A straight line has gradient 2 and passes through the point $(0, 5)$. Write down the equation of the line parallel to this line which passes through the point $(-1, -3)$.
5. What is the y -intercept of the straight line that passes through the point $(5, 12)$ and cuts the x -axis at 1?
6. Alison says that the line $3y - 6x + 3 = 0$ is parallel to the line $4x = 6 - 2y$. Explain why Alison is wrong.
7. The line with equation $y = ax - 5$ passes through the point $(6, 13)$. Show that the equation of the line is $y = 3x - 5$.
8. A straight line passes through the points $(1, 8)$ and $(5, 4)$. Show that the y -coordinate of the point on the line when $x = -3$ is 12.
9. The line passing through the points $(-1, 4)$ and $(5, w)$ is parallel to $10x = \frac{5}{2} - 5y$.
Find the value of w .



GCSE (9-1) MATHEMATICS

10. A regular hexagon is drawn on a coordinate grid so that every vertex is the same distance from the origin. Two vertices are marked at $(0, 4)$ and $(0, -4)$. Find the equations of the six straight lines that would intersect to make this hexagon.

Extension

Match up the following equations with their sketch graphs marking any x - and y -intercepts on the graphs.

A: $y = 5x - 3$

B: $2y = x - 6$

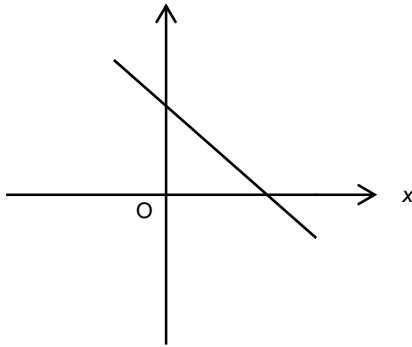
C: $3y = 6x + 15$

D: $4x - y = -5$

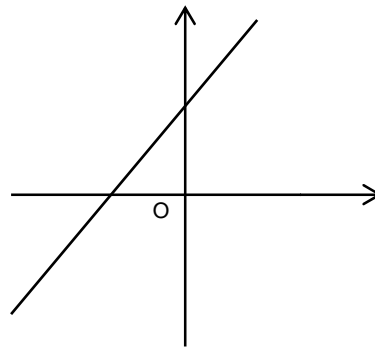
E: $6 - 3x = y$

F: $x + y = 5$

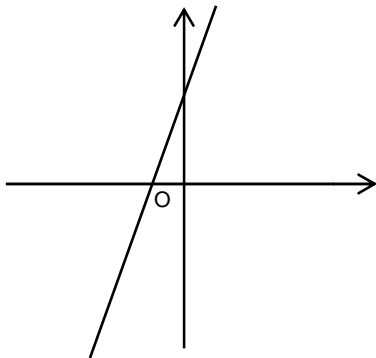
1.



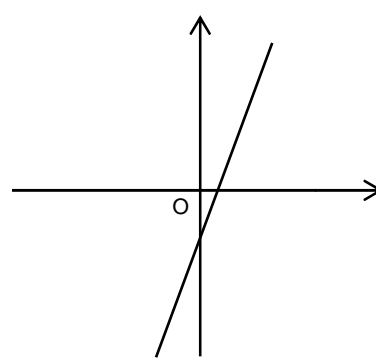
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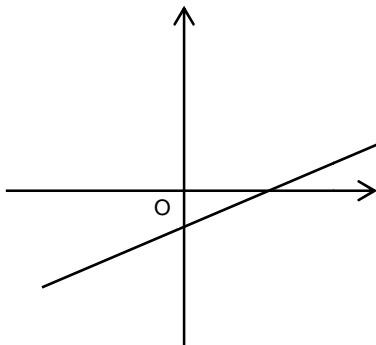
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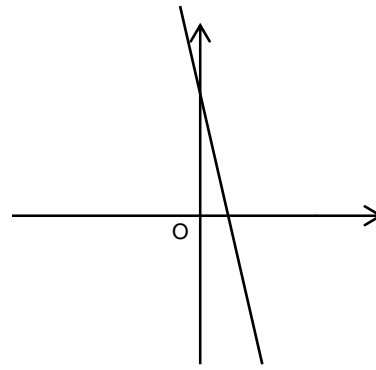
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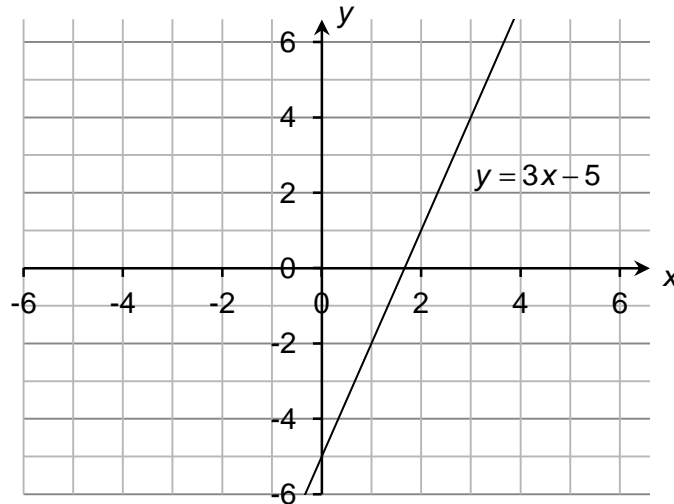


6.



Answers

1.



2. $-\frac{3}{4}$

3. Gradient = $\frac{1}{2}$ so the parallel lines are $y = \frac{1}{2}x + 2$ and $2y = x + 3$.

4. $y = 2x - 1$

5. Gradient = $\frac{12-0}{5-1} = \frac{12}{4} = 3$ so $y = 3x + c$. Substituting one of the coordinates and solving gives $c = -3$.

6. The line $3y - 6x + 3 = 0$ has gradient 2 whereas the line $4x = 6 - 2y$ has gradient -2. Parallel lines must have the same gradient so Alison is wrong.

7. $y = ax - 5$

When $x = 6$ and $y = 13$, $13 = a \times 6 - 5$

$$18 = 6a$$

$a = 3$ therefore the equation is $y = 3x - 5$

8. The gradient of the line is $\frac{4-8}{5-1} = \frac{-4}{4} = -1$ so the equation of the line is $y = -x + c$.

If the line goes through (1, 8), when $x = 1$, $y = 8$ so $8 = -1 + c$

$$9 = c$$

The equation is $y = -x + 9$ so when $x = -3$, $y = 3 + 9 = 12$

9. $w = -8$



GCSE (9-1) MATHEMATICS

$$10. x = 4, x = -4, y = \frac{1}{2}x + 4, y = \frac{1}{2}x - 4, y = -\frac{1}{2}x + 4, y = -\frac{1}{2}x - 4$$

Extension

A: $y = 5x - 3$ is graph 4
(0, -3) and $\left(\frac{3}{5}, 0\right)$

B: $2y = x - 6$ is graph 5
(0, -3) and (6, 0)

C: $3y = 6x + 15$ is graph 2
(0, 5) and $\left(-\frac{5}{2}, 0\right)$

D: $4x - y = 5$ is graph 3
(0, 5) and $\left(-\frac{5}{4}, 0\right)$

E: $6 - 3x = y$ is graph 6
(0, 6) and (2, 0)

F: $x + y = 5$ is graph 1
(0, 5) and (5, 0)

$$x = 4, x = -4, y = \frac{1}{2}x + 4, y = \frac{1}{2}x - 4, y = -\frac{1}{2}x + 4, y = -\frac{1}{2}x - 4$$

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Sketch an equation of a straight line			
AO1	2	Find the intercept of a straight line using $y = mx + c$			
AO1	3	Identify equations of parallel lines			
AO1	4	Find the equation of a parallel line given the gradient and a point on the line			
AO1	5	Find the y-intercept of a straight line that passes through two given points			
AO2	6	Apply knowledge of equations of parallel lines			
AO2	7	Find the equation of a straight line using $y = mx + c$ and a point on the line			
AO2	8	Find a y-coordinate of a point on a straight line that passes through two given points			
AO3	9	Solve a problem involving the equation of a straight line that passes through two given points			
AO3	10	Solve a geometric problem by identifying equations of lines			

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