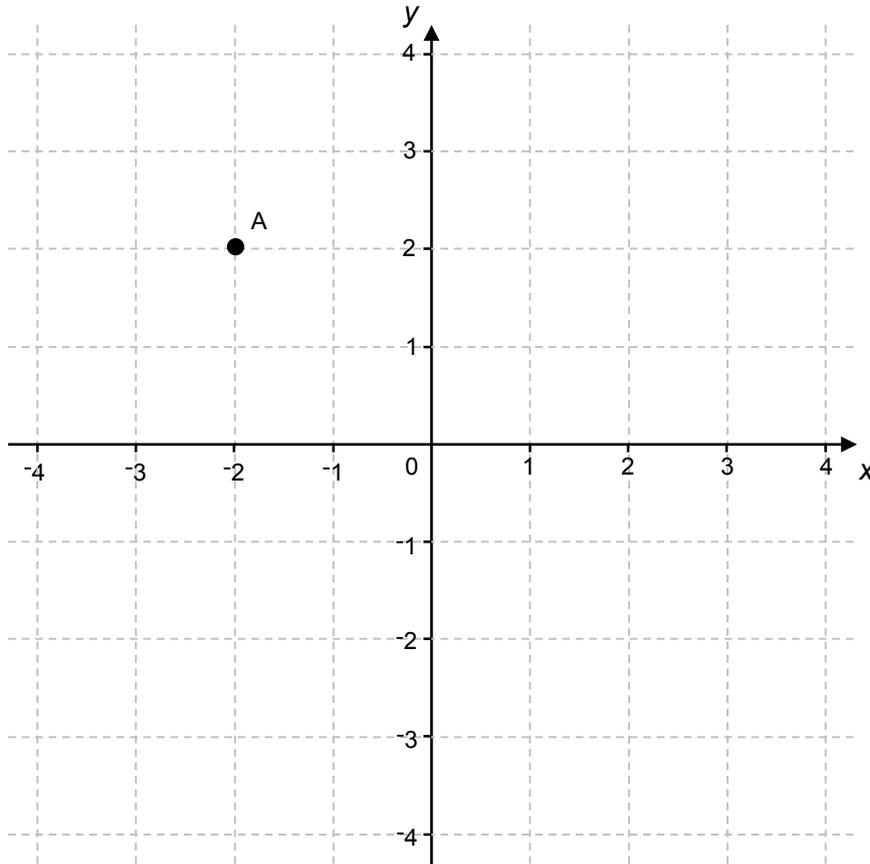


Topic Check In - 7.01 Graphs of equations and functions



1. State the coordinates of point A, shown on the grid above.
2. Plot (3, -1) on the grid above and label it B.
3. Draw the line $x = 2$ on the grid above.
4. Draw the line $y = -3$ on the grid above.
5. Toni sketches $y = 2x$, $y = 3x$, $y = 4x$... up to $y = 10x$ on the same grid. What point do all the lines pass through?
6. Explain where the lines $x = 3$ and $y = 2$ cross.



GCSE (9-1) MATHEMATICS

7. Harry has completed this table of values for $y = x^2$ but he has made some errors. Explain the mistakes that Harry has made.

x	-2	-1	0	1	2
y	-4	-1	0	1	4

8. Explain what the number pattern in this table of values tells you about the shape of the graph.

x	-2	-1	0	1	2
y	-10	-6	-2	2	6

9. The table of values below is for the straight line graph $y = 2x + c$. Work out the missing values.

x	-4		0	3
y		-5	-3	

10. The lines $x = 3$ and $y = x$ form two sides of a triangle with an area of 8 units². Find an equation for the third side of the triangle.

[Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height}$]

Extension

Explain clearly why the lines $y = 3x + 1$ and $y = 3x - 2$ never meet. Find other pairs of lines which never meet.



Answers

1. (-2, 2)
2. Correctly plot $x = 3$, $y = -1$
3. Correctly draw the vertical line $x = 2$ [goes through the points (2, -1), (2, 0), (2, 1) etc].
4. Correctly draw the horizontal line $y = -3$ [goes through the points (-1, -3), (0, -3), (1, -3) etc].
5. Passes through the origin (0, 0) [because the y -intercept is zero in each case].
6. All the points on the line $x = 3$ have an x -coordinate of 3.
All the points on the line $y = 2$ have a y -coordinate of 2.
The lines therefore cross at (3, 2).
7. Harry has worked out $-(2)^2 = -4$ but it should be $(-2)^2 = 4$
Harry has worked out $-(1)^2 = -1$ but it should be $(-1)^2 = 1$
8. As the x values go up by 1, the y values go up by 4 which gives a linear pattern so the graph will be a straight line.
9. (0, -3) is the y -intercept so the equation of the line is $y = 2x - 3$ and the missing values are -11, -1, 3.
10. A sketch of $x = 3$ and $y = x$ can be used to identify the line $y = -1$ as the third side of the right-angled triangle so that $\frac{1}{2}bh = 8 \text{ units}^2$.

Extension

Both equations have the same gradient so they are parallel. Any pair of lines in the form $y = mx + c$ where m is the same will be parallel.



We'd like to know your view on the resources we produce. By clicking on the 'Like' or 'Dislike' button you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

OCR Resources: *the small print*

OCR's resources are provided to support the teaching of OCR specifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. We update our resources on a regular basis, so please check the OCR website to ensure you have the most up to date version.

© OCR 2015 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content: Maths and English icons: Air0ne/Shutterstock.com



Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use correct notation to define points on a coordinate grid.			
AO1	2	Plot points on a coordinate grid.			
AO1	3	Draw vertical lines defined by $x =$.			
AO1	4	Draw horizontal lines defined by $y =$.			
AO1	5	Sketch the graphs of simple linear functions and identify the y -intercept.			
AO2	6	Identify a point of intersection of 2 lines.			
AO2	7	Generate a table of values for a quadratic function such as $y = x^2$.			
AO2	8	Recognise a linear sequence in a table of values.			
AO3	9	Generate a table of values for a simple linear function.			
AO3	10	Link geometry and straight line graphs to solve problems.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use correct notation to define points on a coordinate grid.			
AO1	2	Plot points on a coordinate grid.			
AO1	3	Draw vertical lines defined by $x =$.			
AO1	4	Draw horizontal lines defined by $y =$.			
AO1	5	Sketch the graphs of simple linear functions and identify the y -intercept.			
AO2	6	Identify a point of intersection of 2 lines.			
AO2	7	Generate a table of values for a quadratic function such as $y = x^2$.			
AO2	8	Recognise a linear sequence in a table of values.			
AO3	9	Generate a table of values for a simple linear function.			
AO3	10	Link geometry and straight line graphs to solve problems.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use correct notation to define points on a coordinate grid.			
AO1	2	Plot points on a coordinate grid.			
AO1	3	Draw vertical lines defined by $x =$.			
AO1	4	Draw horizontal lines defined by $y =$.			
AO1	5	Sketch the graphs of simple linear functions and identify the y -intercept.			
AO2	6	Identify a point of intersection of 2 lines.			
AO2	7	Generate a table of values for a quadratic function such as $y = x^2$.			
AO2	8	Recognise a linear sequence in a table of values.			
AO3	9	Generate a table of values for a simple linear function.			
AO3	10	Link geometry and straight line graphs to solve problems.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use correct notation to define points on a coordinate grid.			
AO1	2	Plot points on a coordinate grid.			
AO1	3	Draw vertical lines defined by $x =$.			
AO1	4	Draw horizontal lines defined by $y =$.			
AO1	5	Sketch the graphs of simple linear functions and identify the y -intercept.			
AO2	6	Identify a point of intersection of 2 lines.			
AO2	7	Generate a table of values for a quadratic function such as $y = x^2$.			
AO2	8	Recognise a linear sequence in a table of values.			
AO3	9	Generate a table of values for a simple linear function.			
AO3	10	Link geometry and straight line graphs to solve problems.			

