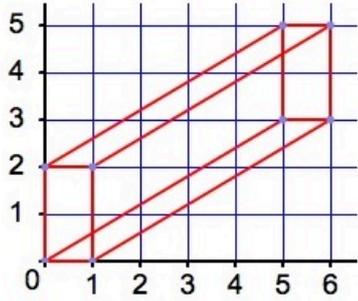
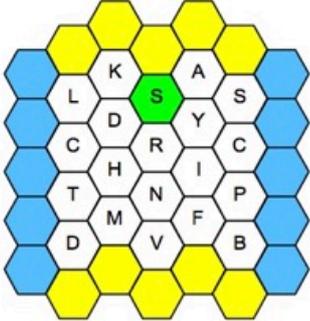


Y8 & Y9 Algebra Starters



More Algebra Interactive Starters

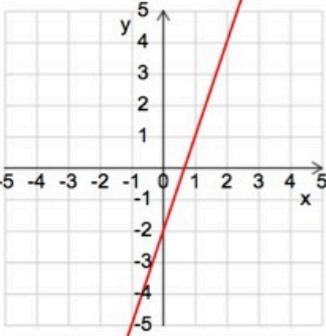
$y=5x+1$ $y=8x+7$ $y=3x-6$

$9a - 11 = 7$

$4x + 5 = 25$	$5x - 9 = 31$
<input type="text"/>	<input type="text"/>
$5x - 3 = 32$	$9x + 2 = 110$
<input type="text"/>	<input type="text"/>

Simplify
 $2(4s + 1) + 8(5s - 7)$

Equation of line is
 $y = 2x - 4$



Spire Maths Interactives

<https://spiremaths.co.uk/ia/>

There are 9 Algebra Interactives: each with three levels. The titles of the interactives are given below. Brief teacher notes are given for each interactive.

Unfortunately flash files will not work on iPads or iPhones.

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Unfortunately they will not work on iPads or iPhones.

Solving equations and substitution

OBJECTIVE(S): Solve linear equations with integer coefficients; substitute integers into simple formulae.
DESCRIPTION: A drag and drop starter where solutions are matched to equations.

Solving equations and substitution

In the orange boxes are eight equations in x . At the bottom are eight values of x that are solutions of the equations. Drag and drop each of the eight numbers at the bottom into the correct grey cell.

[Pen on](#)

$9x - 5 = 76$ <input type="text"/>	$6x + 4 = 70$ <input type="text"/>	$9x + 7 = 70$ <input type="text"/>	$4x - 5 = 3$ <input type="text"/>
$4x - 8 = -4$ <input type="text"/>	$2x + 3 = 3$ <input type="text"/>	$9x - 4 = 41$ <input type="text"/>	$7x + 2 = 23$ <input type="text"/>

11 0 3 7 9 1 2 5

Level 1

[Check](#)

[New](#)
[Show timer](#)
[Reset](#)

« »

Eight orange boxes are shown on screen, each with an empty grey cell inside it. Each contains an equation in x . Eight values of x are presented underneath these boxes. Pupils are invited to drag and drop the values at the bottom into the correct grey cells. Answers can be verified using the check button. Correct answers are 'ticked' incorrect answers are 'crossed'. Incorrect numbers can be moved until a correct solution is found. The timer can be used to show the total time taken to arrive at a completely correct solution. (The timer works even when it is not visible).

There are 3 levels differentiated by values of x used. Level one is positive integers, level two includes some decimals and level three negative numbers.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

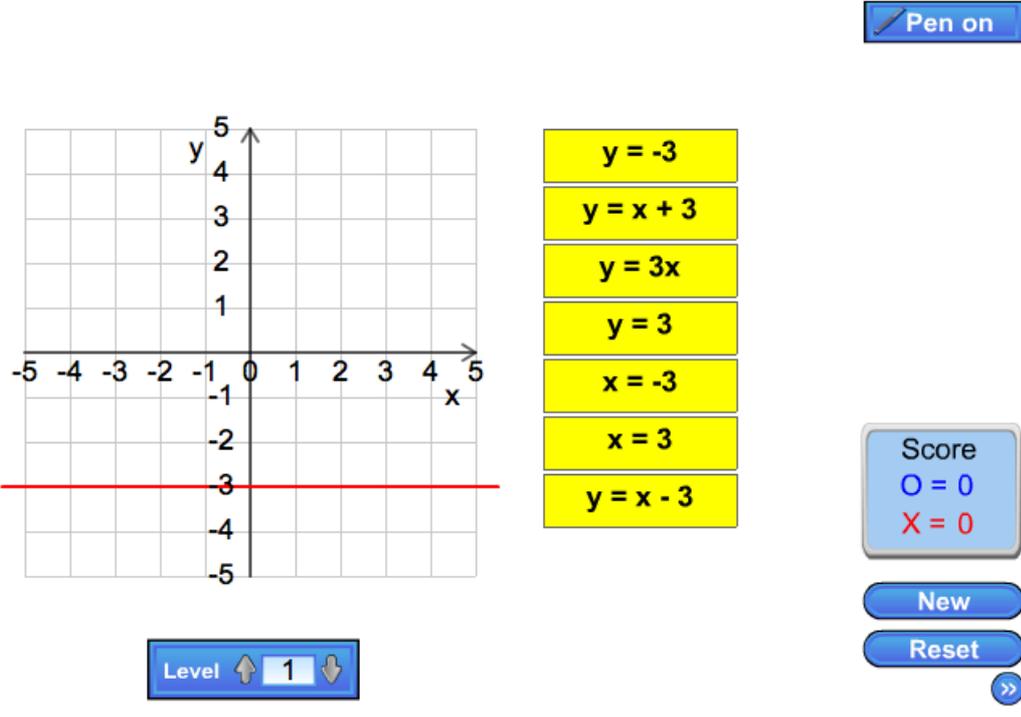
Unfortunately they will not work on iPads or iPhones.

Straight line graphs 1: O and X

OBJECTIVE(S): Match 'simple' straight line graphs with their equations.
DESCRIPTION: A noughts and crosses game for two teams. Match a 'simple' straight line with its equation to gain your nought or cross.

Straight line graphs 1: O and X

Click the yellow box that shows the equation of the line shown on the co-ordinate grid.



Pen on

Score
O = 0
X = 0

New
Reset

Level 1

A noughts and crosses board is shown. One team is noughts, the other crosses. Pupils select a square and are then taken to a question. If they get the question right, they get the nought or cross, if not their go is complete. The winning team needs a row of three of their symbol (as in the standard game). Scores are shown on a scoreboard, which keeps a record of wins until a level is changed or Reset is clicked. Here a straight line is shown on a co-ordinate grid and pupils have to click the yellow box that shows the equation of the straight line - there are seven yellow boxes shown.

There are 3 levels differentiated by the lines shown; level 1 shows only vertical and horizontal lines, level 2 includes lines with gradient of one and level 3 includes lines with gradients of minus one.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

Unfortunately they will not work on iPads or iPhones.

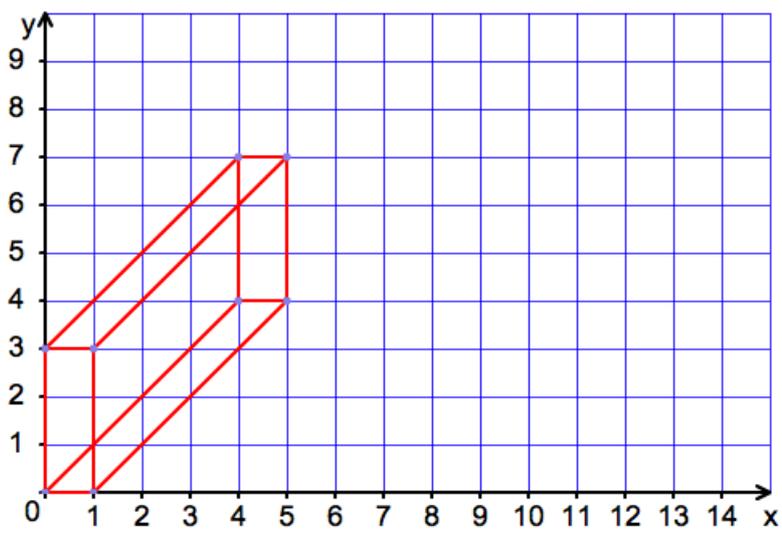
Equations of lines

OBJECTIVE(S): Find line segment lying on a line with a given equation.
DESCRIPTION: Click line segments that lie on lines with a given equation.

Equations of lines

The shape on the grid is made up of line segments.
Click the line segment that lies on the line with equation:

$y = 7$



Pen on

Level 1

New
Reset

An x-y co-ordinate grid is shown with 12 line segments drawn on it so that they 'appear' to make the edges of a cuboid. You are given the equation of a line and asked to click a line segment that lies on this line.

There are 3 levels differentiated by the equation given. Level 1 only gives equations of lines parallel to the x and y axes, level 2 includes some of these and some of the other lines where gradients will be positive and negative integers and level 3 also includes examples of lines with fractional gradients.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

Unfortunately they will not work on iPads or iPhones.

Co-ordinates and straight lines

OBJECTIVE(S): Find points on a straight line graph given only the equation in the form $y = mx + c$.

DESCRIPTION: Build a 'robot' by finding 10 points on different straight lines. Timer available.
Click on the orange cell to save entering an answer.

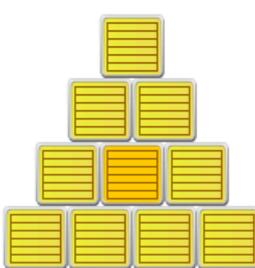
Co-ordinates and straight lines

The equation of a straight line is given below. What is the missing **y co-ordinate**? Use the keypad to enter your answer in the blue cell. Click **Check** to see if you are correct.

Equation of line is
 $y = 9x - 4$

(5 ,)

7	8	9
4	5	6
1	2	3
0	.	(-)
n	+	-
Clear		



Make A Robot





Lives: 3
Parts Left: 10

Create Legs

↑ 1 ↓

<<
>>

Ten yellow 'crates' are shown on the screen together with a 'factory' bench and an instruction to click a 'crate' for a question. Pupils can choose any one of the 10 crates. A question appears of the form here is the equation of a straight line, find a point on it - and you will either be given the x co-ordinate, the y co-ordinate or can choose both yourself.

Answers can be 'entered' in the blue cell(s) and then checked. To speed up the process the original 'crate' (which turns orange on clicking) can be clicked again to signify a correct (oral) answer. Another 'crate' can then be selected.

The timer can be used to show the total time taken to answer all 10 questions (the timer works even when it is not visible).

There are 3 levels differentiated by the numbers used. At level one only positive values are used. Level two introduces some negative values in the equation and level 3 allows negative x co-ordinates as well (at levels 2 and 3 negative y co-ordinates may also arise).

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

Unfortunately they will not work on iPads or iPhones.

Points on straight lines

OBJECTIVE(S): Match straight lines with points that lie on them.
DESCRIPTION: An 18 card matching challenge based on points lying on straight lines.

Points on straight lines

Here are nine equations of straight lines and nine co-ordinates.
Click a co-ordinate and the line it lies on.

(0, -6)	(0, -5)	$y=3x$	(0, -2)	$y=3x-6$	$y=4x+7$
(0, 7)	$y=7x-5$	(0, 5)	(0, -9)	$y=5x-9$	$y=7x+5$
$y=x-2$	(0, 0)	$y=2x+4$	$y=3x+6$	(0, 4)	(0, 6)

⏪
⏩

Pupils choose two cards on a 3 by 6 grid. There are nine equations of straight lines and 9 co-ordinates. Each co-ordinate lies on only one line. You have to match the coordinate with the line it is on. Click Repeat to use the same equations and co-ordinates again, but the cards will be shuffled.

The timer can be used to show the total time taken to find the nine pairs (the timer works even when it is not visible).

Level one all co-ordinates are of the form $(0, c)$ where c is an integer; level 2 has five points as in level one and four points where co-ordinates are of the form $(a, 0)$; and level three has nine parallel lines and points where all the x-co-ordinates are different.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

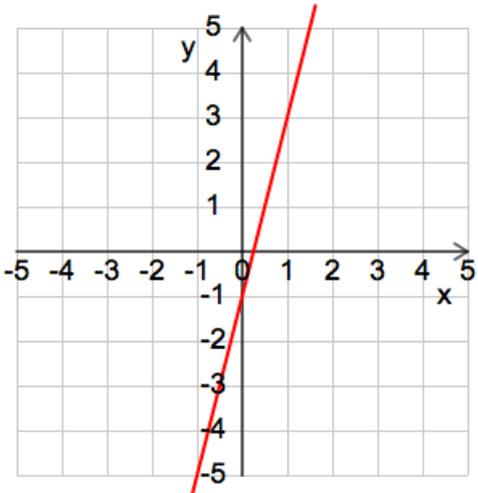
Unfortunately they will not work on iPads or iPhones.

Straight line graphs 2: O and X

OBJECTIVE(S): Match straight line graphs with their equations.
DESCRIPTION: A noughts and crosses game for two teams. Match a straight line with its equation to gain your nought or cross.

Straight line graphs 2: O and X

Click the yellow box that shows the equation of the line shown on the co-ordinate grid.



Pen on

$y = 4x - 1$

$x = 1$

$y = 2x - 1$

$y = 2x + 1$

$y = x - 1$

$y = 4x + 1$

$x = -4$

Score
O = 0
X = 0

New
Reset

Level 1

A noughts and crosses board is shown. One team is noughts, the other crosses. Pupils select a square and are then taken to a question. If they get the question right, they get the nought or cross, if not their go is complete. The winning team needs a row of three of their symbol (as in the standard game). Scores are shown on a scoreboard, which keeps a record of wins until a level is changed or Reset is clicked. Here a straight line is shown on a co-ordinate grid and pupils have to click the yellow box that shows the equation of the straight line - there are seven yellow boxes shown.

There are 3 levels differentiated by the lines shown; level 1 shows lines with positive gradients, level 2 includes lines with negative gradients and level 3 includes horizontal and vertical lines.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

Unfortunately they will not work on iPads or iPhones.

Equation hexagons

OBJECTIVE(S): Use formulae from mathematics and other subjects; substitute integers into simple formulae.

DESCRIPTION: A hexagon game for two teams. Substitute into equations to make a continuous line of hexagons from top to bottom or side to side.

Equation hexagons

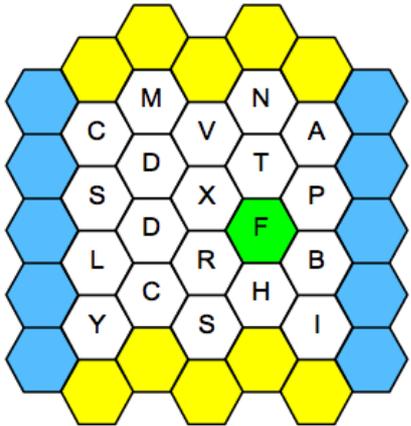
Click **Correct** or **Incorrect** depending on how the question has been answered. If the answer is incorrect then the hexagon goes to the other team.

0 : 17

Pen on

What is the value of F in the formula: $F = ma$

When $m = 9$ and $a = 5$?



Turn Blue Team

Correct

Show

Incorrect

Level 1

New

Reset

Twenty white hexagons, each containing a letter of the alphabet, are shown in five vertical lines of four hexagons. They are surrounded by five yellow hexagons, top and bottom, and five blue hexagons, left and right. The object is to answer questions based on the letter correctly to make a continuous line of hexagons joining the coloured hexagons. The shortest route for blue is five hexagons and for yellow is four hexagons. A question shows an equation containing the letter and other letters. You are given the values of the other letters and have to substitute them into the equation to find the value of the letter. Equations chosen are almost always taken from mathematics or science and many, if not all, are familiar. The equations and numbers used are the same at all levels. A correct answer turns the hexagon the team's colour, while an incorrect response gives the hexagon to the other side. There is a time limit according to level and the time is shown counting down. The answer has to be given in the allotted time, otherwise it is assumed to be incorrect and the hexagon is 'given' to the other side. The question person decides if the answer is correct or not - there is a Show facility to check the answer (the timer is now stopped), after which correct or incorrect must be clicked. Correct or incorrect can be clicked at any point before the clock reaches 0. There are 3 levels differentiated by time allowed: level 1 is 30 seconds, level 2 is 25 seconds and level 3 is 15 seconds.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

Unfortunately they will not work on iPads or iPhones.

Making and solving equations

OBJECTIVE(S): Construct and solve linear equations with integer coefficients; substitute integers into simple formulae.
DESCRIPTION: Pupils have to select 3 cards in order to make correct algebraic statement with given values of one or more variables.

Making and solving equations

The value of $b = 9$, $p = 4$, $s = 7$ and $y = 6$. Make as many true statements as you can using these values by clicking three different cards in the correct order. When you have made as many as possible click [New](#) for a new pack of cards.

+ =

62	4	2	5b
18	8s	54	40
6y	4p	9	6

A pack of twelve cards is shown on screen. Four cards show a multiple of a variable, such as a, b, m and x, while the rest show a number. A statement at the top assigns a value to each of the four variables. Pupils have to select three cards in order to make a true statement where the first two are added to make the third (level one), the second is taken from the first to make the third level (two) and these two alternate as each new pack is selected (level three). As a card is clicked it is entered into position in the order clicked and cannot be changed. You can usually make 10 to 12 statements with each pack. Click New for another pack of cards. There are 3 levels differentiated by numbers used and the operation.

Spire Maths interactive files available in a flash format at: <https://spiremaths.co.uk/ia/>

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