Daily Practice 5.6.2015

Q1. Multiply out and simplify $3(2x + 4) - x(7 - x)$

$6x + 12 - 7x + x^2$

$12 - x + x^2$

Q2. Solve the equation $3x + 6 = 2x - 18$

$-2x \quad -2x$

$x + 6 = -18$

$-6 \quad -6$

$x = -24$

Q3. A dress cost £40, it was reduced by 15% in the sale, how much is it now?

$10\% = £40 \div 10 = £4$

$5\% = £4 \div 2 = 2$

$15\% = £4 + 2 = £6$

$£40 - £6 = £34$

Q4. $2\frac{2}{3} - \frac{3}{5}$ $\quad \times 5 \quad \times 3$

$= \frac{8}{3} - \frac{3}{5}$ LCM=15

$\frac{40}{15} - \frac{9}{15} = \frac{31}{15} = 2\frac{1}{15}$

Q5. Write 0.0000916 in standard form

9.16×10^{-5}

L.I: Today we will be learning about gradient.

S.C: We will be able to understand what gradient is and how to calculate it.

Homework Due!

Gradient 5.6.15

Where have you come across gradient before?

Gradient

The gradient of a slope is a measure of its steepness.

A positive gradient means that the slope goes up from left to right.

A negative gradient means that the slope goes down from left to right.(This is usually only taken in account when we are dealing with on a coordinate grid)

Gradient

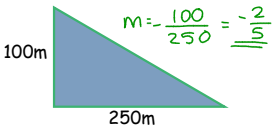
Gradient is always represented with the letter "m". It can be written as a simplified fraction or a decimal. When dealing with straight line, we write it as a fraction.

$$m = \frac{\text{vertical height}}{\text{horizontal distance}}$$

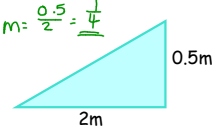
GRADIENTS LINES EQUATIONS v2.exe

Gradient

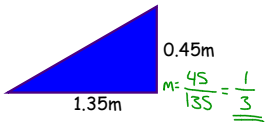
Work out the gradient of the following (simplify where possible):



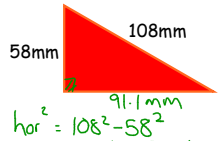
$m = -\frac{100}{250} = -\frac{2}{5}$



$m = \frac{0.5}{2} = \frac{1}{4}$



$m = \frac{45}{135} = \frac{1}{3}$



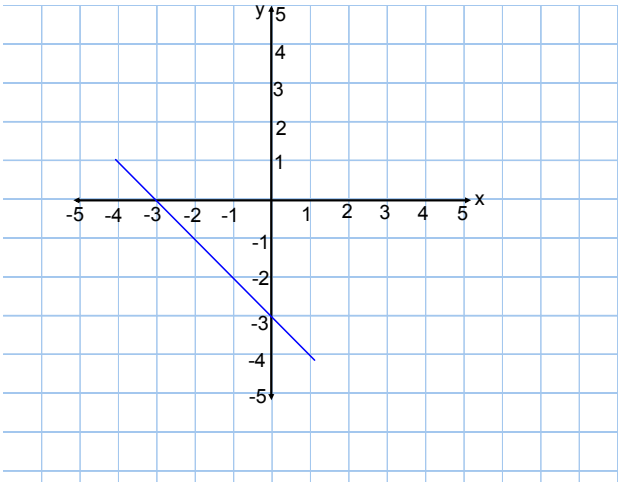
$hor^2 = 108^2 - 58^2$

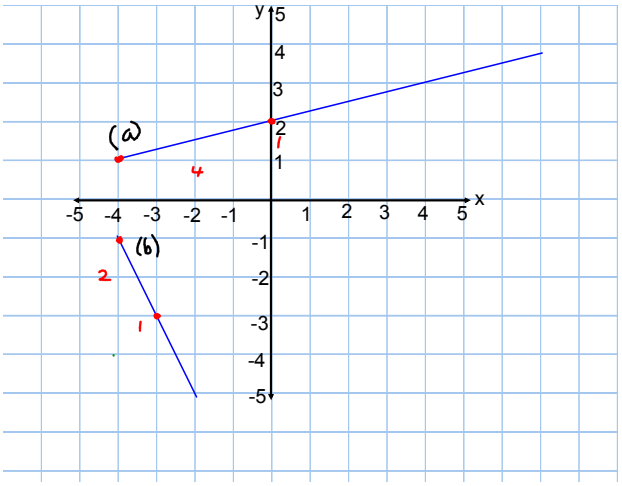
$= 11664 - 3364$

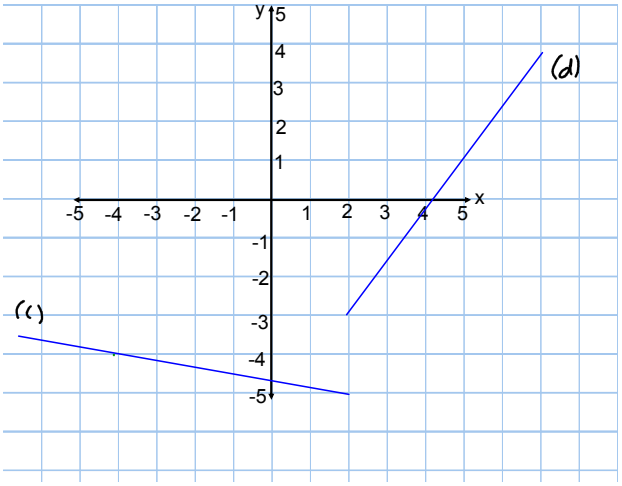
$= 8300$

$h = \sqrt{8300} = 91.1$

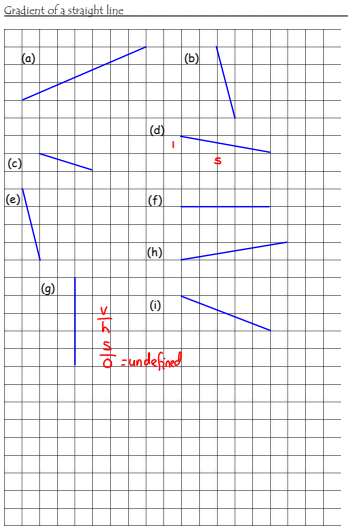
$m = \frac{58}{91.1}$





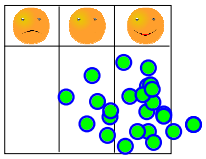


Gradient of a straight line

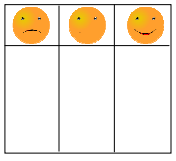


Success?

I can define gradient and explain to someone how it is calculated.



I can calculate the gradient of slopes of various steepness.

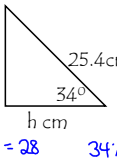


Daily Practice 8.6.2015

Q1. Calculate the length of h

$\cos x = \frac{a}{h}$ $\cos 34° = \frac{h}{25.4}$

$25.4 \cos 34° = h$



$h = 21.06$ cm

Q2. Find 34% of 700

10% = 700 ÷ 10 = 70 1% = 7

30% = 70 × 3 = 210 4% = 7 × 4 = 28

34% = 210 + 28 = 238

Q3. Round 28252 to 3 significant figures

→ 28300

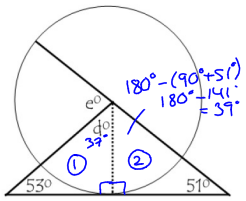
Q4. $\frac{3 \times 4 - (-8) \div 2}{12 - (-4)}$

$= 12 \div 4 = 16$

BODMAS

Q5. $\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$

(ii)

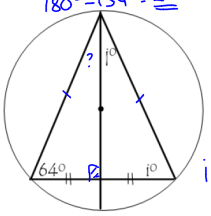


$180° - (90° + 51°)$
$180° - 141°$
$= 39°$

$d = 180° - (90° + 53°)$
$180° - 143° = 37°$

$e = 180° - (37° + 39°)$
$180° - 76° = 104°$

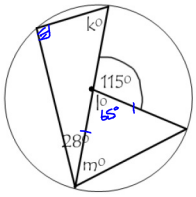
(iv)



$180° - (90° + 64°)$
$180° - 154° = 26°$

$i = 64°$

(v)

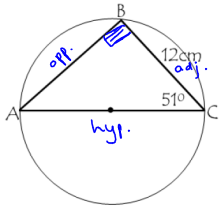


$k = 180° - (90° + 28°)$
$180° - 118° = 62°$

$l = 180° - 115° = 65°$

$180° - 65° = 115°$
$115° \div 2 = 57.5° = m$

Q2.



Given that BC = 12cm and that angle ACB is 51°. Find the length of the diameter AC

$\cos x = \frac{a}{h}$

$\cos 51° = \frac{12}{AC}$

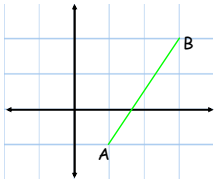
$AC \cos 51° = 12$

$AC = \frac{12}{\cos 51°} = 19.1cm$

L.I: Today we will be learning how to calculate the gradient given a diagram or points on a coordinate grid.

S.C: I will be able to work out a formula to calculate the gradient given two points.

Gradient of a straight line 8/6/15



What are the coordinates of A and B?

A(1, -1) B(3, 2)

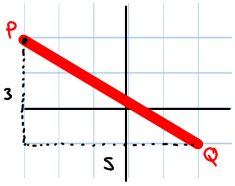
What is the gradient of line AB?

$m = \frac{v}{h} = \frac{3}{2}$

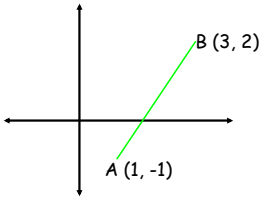
Question:

By drawing the points on a coordinate grid, find the gradient of PQ where P(-3, 2) and Q = (2, -1)

$m = \frac{v}{h} = \frac{3}{5}$



Gradient of a straight line



How can we find the gradient without counting the squares?

$\frac{v}{h} = \frac{3}{2}$

☆Can we come up with a formula to represent this?

$(x_1, y_1) \quad (x_2, y_2)$

$\frac{v}{h} = \frac{y_2 - y_1}{x_2 - x_1}$

Gradient of a straight line

To find the gradient of a line given two points (x_1, y_1) and (x_2, y_2)

$$m = \frac{\text{vertical height}}{\text{horizontal distance}} \quad \text{so} \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

Examples: Find the gradient of the lines joining

(a) A(2, -1) and B(4, -5) $x_1\ y_1$ $x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - (-1)}{4 - 2}$

$= \frac{-4}{2} = -2$

(b) P(-3, -2) and Q(0, 4) $x_1\ y_1$ $x_2\ y_2$

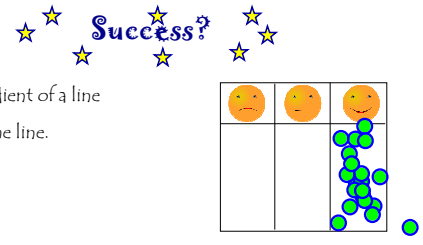
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-2)}{0 - (-3)}$

$= \frac{6}{3} = 2$

L.I: Today we will be practising questions on working out the gradient of a line.

S.C: We will be able to work out the gradient of a line from a diagram or having been given 2 points.

pg. 166-171



I can calculate the gradient of a line given two points on the line.

Daily Practice 9.6.2015

Q1. Find the value of a car that was worth £6000 and depraciated in value by 12.5% per annum for 2 years

10% = £600 2.5% = £150 6000 - 750 = 5250

5% = £300 12.5% = 750 12.5% of 5250 = 656.25

5250 - 656.25 = £4593.75

Q2. Calculate the diameter of a circle that has a circumference of 10cm

Non-calc. use $\frac{22}{7}$ as π

$C = \pi D$ $\frac{10}{1} \times \frac{7}{22} = D$

$10 = \frac{22}{7} D$ $\frac{70}{22} = D$

$\div \frac{22}{7}$ $\div \frac{22}{7}$ $3\frac{2}{11} = D$

Q3. Write 0.00003471 in scientific notation

3.471×10^{-5}

Q4. $2\frac{2}{3} \div \frac{1}{4}$

$= \frac{8}{3} \div \frac{1}{4} = \frac{8}{3} \times \frac{4}{1} = \frac{32}{3} = 10\frac{2}{3}$

Gradient of a straight line

Task: On your piece of squared paper. Make up a question on gradient.

You can draw a coordinate grid and a line connecting points.

or

Give two points and ask to calculate the gradient

or

Write a question that's in a context.

Daily Practice 10.6.2015

Q1. Multiply out and simplify 3(2x - 1) + 4(x + 9)

$6x - 3 + 4x + 36$

$10x + 33$

Q2. 48 ÷ 0.008

$\Rightarrow 0.008 \times 6 = 0.048$ $\times 1000 = 48$ 6000

$\frac{48}{0.008} \times \frac{1000}{1000} = \frac{48000}{8}$ $48 \div 8 = 6$ 6000

Q3. $2\frac{1}{3} - \frac{1}{5} = \frac{7}{3} - \frac{1}{5} = \frac{35}{15} - \frac{3}{15} = \frac{32}{15} = 2\frac{2}{15}$

Q4. Calculate the length of a cube with volume 64cm³

$V = L^3$ $L \times L \times L = 64$ $\sqrt[3]{64} = 4cm$

$V = L \times B \times H$

Q5. Find the value of $3x^2 - 2y$ when x = -3 and y = 4

$3 \times (-3)^2 - 2 \times 4$

$3 \times 9 - 2 \times 4$

$27 - 8 = 19$

L.I: Today we will be learning about the link between the equation of the line, the gradient and the y - intercept.

S.C: We will be able to interpret the equation of a line and be able to state the equation of a line given its graph.

Equation of a Line

What is the equation of a line?

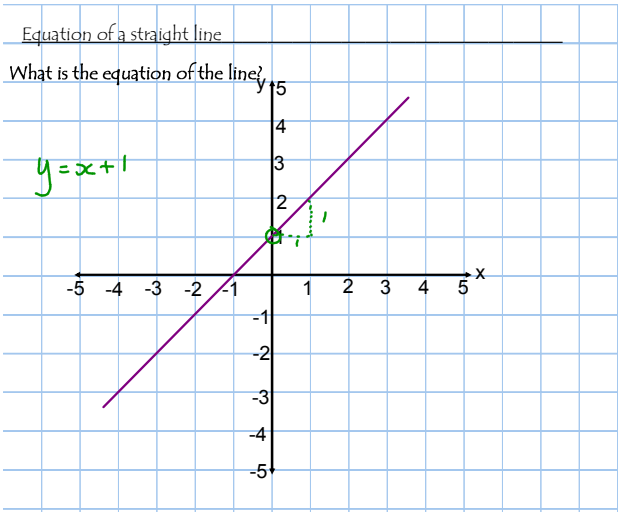
The equation of a line tells us the connection between the x and the y coordinates on a set of axes.

We start out with the equation y = x

Straight Line stuff.ggb

Equation of a straight line

What is the equation of the line?



Equation of a straight line

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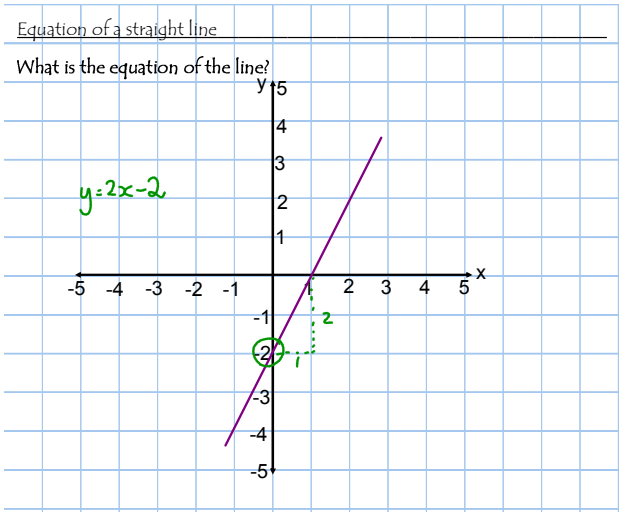

Equation of a straight line

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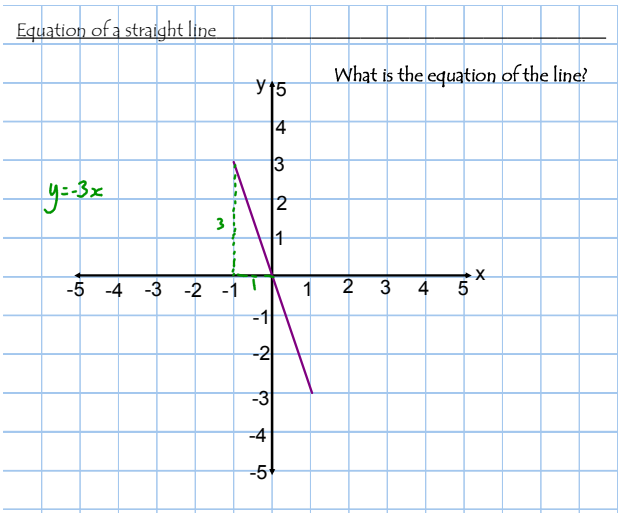

Equation of a straight line

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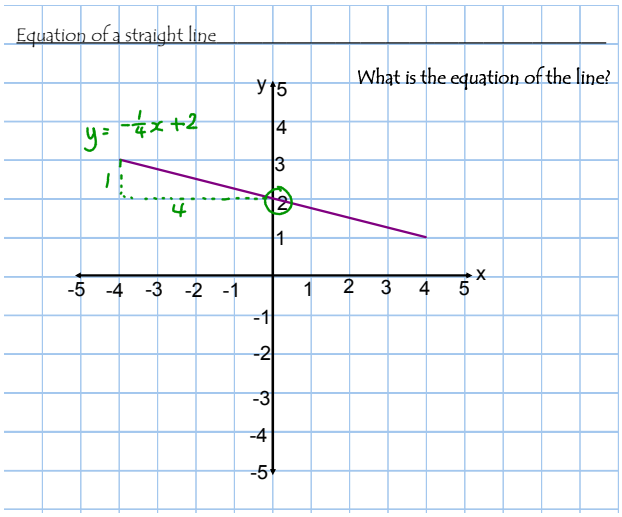
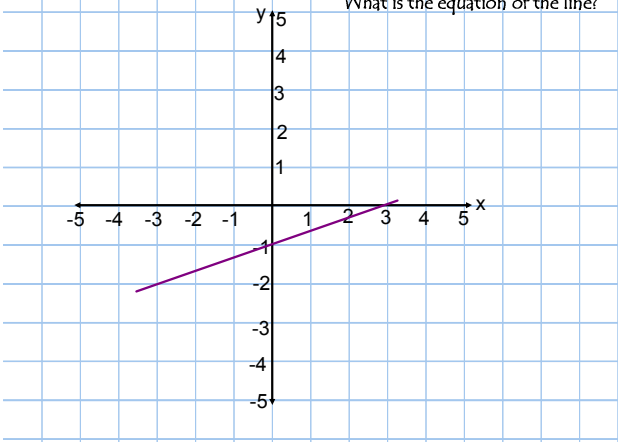


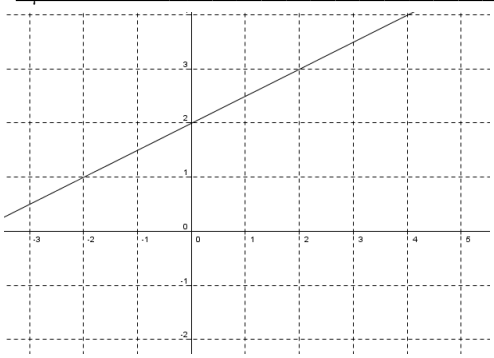
Equation of a straight line

What is the equation of the line?



Equation of a Line

State the equation



Equation of a straight line 10.6.15

The equation of a line is written in the form y = mx + c where m represents the gradient and c represents the y - intercept.

y = 2x + 4

y - intercept = (0, 4)

Gradient = 2

Example: State the equation of the line joining (-1, 4) and (0, -8)

$y = mx + c$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8-4}{0-(-1)} = \frac{-12}{1} = -12$

y-intercept = -8

$y = -12x - 8$

Daily Practice 12.6.2015

Q1. Calculate the gradient of the line joining (-1, 2) and (4, 3)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-2}{4-(-1)} = \frac{1}{5}$

Q2. Find the new value of a house that was purchased for £190 000 and increased in value by 2.5%

1% = 1900 0.5% = 1900 ÷ 2 = 950

2% = 1900 × 2 = 3800 2.5% = 3800 + 950 = £4750

£190000 + 4750 £194750

Q3. Write 18 out of 25 as a percentage

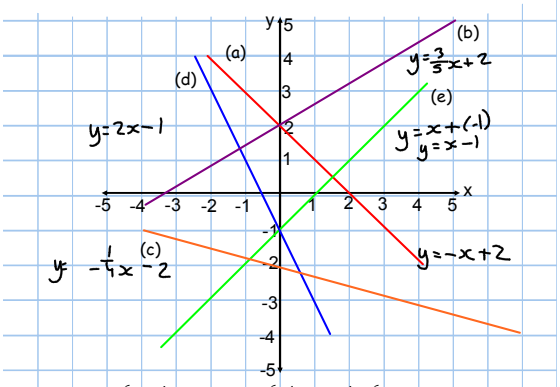
$\frac{18}{25} \times \frac{4}{4} = \frac{72}{100} = 72\%$

Q4. $1\frac{2}{5} \div \frac{3}{4} = \frac{7}{5} \times \frac{4}{3} = \frac{28}{15} = 1\frac{13}{15}$

L.I: Today we will be continuing to learn how to create an equation given two points or the graph of a line.

Equation of a straight line

State the equations of the lines shown



How do you find the equation of a line in the form y = mx + c and you have been given two points on the line?

Equation of a straight line

How do you find the equation of a line in the form y = mx + c and you have been given two points on the line?

Equation of a straight line

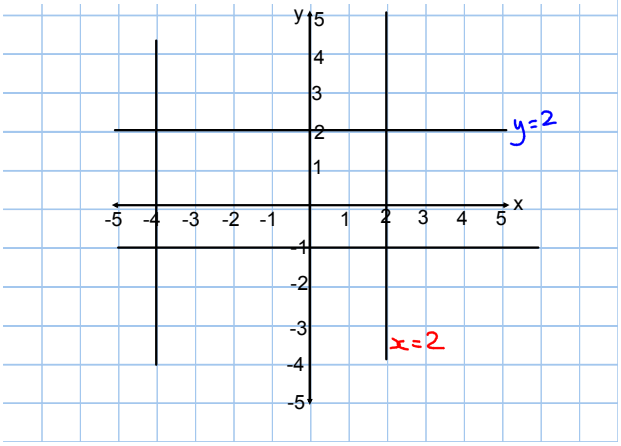
Algebraic Method:

- Work out the gradient.
- Substitute the gradient and one of your coordinates into the equation and solve for c.
- State the equation.

Example: State the equation of the line joining (-2, 3) and (2, 5)

Equation of a Line

There are some special cases that aren't in terms of both y and x.



Equation of a Line 12.6.15

There are some special cases that aren't in terms of both y and x

These are vertical and horizontal lines and the x and y axes.

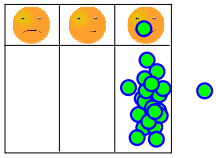
Vertical lines are always of the form x = a

Horizontal lines are always of the form y = b

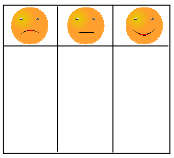
The x - axis has the equation y = 0

The y - axis has the equation x = 0

I recognise the relationship between the gradient, y - intercept and the equation of a line.



I can state the equation of a line given its graph.



Daily Practice 15.6.2015

Q1. Solve the equation 3(2x - 1) = 2(x - 4)

$6x-3=2x-8$

$4x-3=-8$

$4x=-5$

$x=-\frac{5}{4}$ or $-1\frac{1}{4}$

Q2. -3 - (-17) + 20% of 50

$-3+17$

$14 + \frac{20}{100} \times 50 = 24$

Q3. $1\frac{2}{3} \times \frac{2}{5} = \frac{5}{3} \times \frac{2}{5_1} = \frac{2}{3}$

Q4. 0.04 x 0.2

0.008

$\frac{4}{100} \times \frac{2}{10} = \frac{8}{1000} = 0.008$

L:I: Today we will be learning how to draw a straight line given its equation.

S.C: I will be able to create a table of values and draw a line given its equation.

Homework Online due Friday 19.6.15

Drawing a line given its equation 15.6.15

Given the equation of a straight line in the form y = mx + c

Simply substitute various values in for x and then work out the corresponding y. This will give you coordinates.

We call this making a **table of values**.

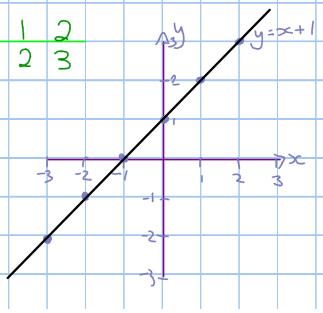
If the equation requires finding half of x, choose even numbers as your x - values.

Drawing a straight line using its equation

Example:

1. Draw the line y = x + 1

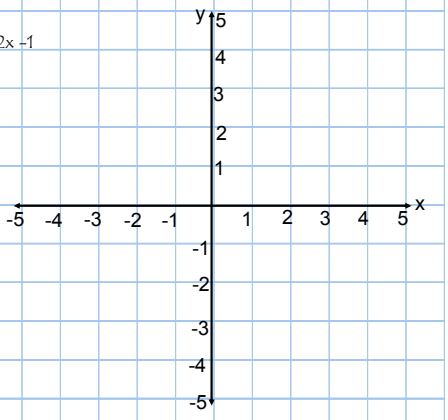
x	-3	-2	-1	0	1	2
y	-2	-1	0	1	2	3



Drawing a straight line using its equation

Example:

2. Draw the line y = 2x -1

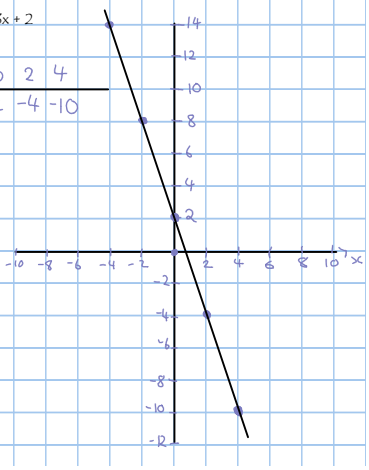


Drawing a straight line using its equation

Example:

2. Draw the line y = -3x + 2

x	-4	-2	0	2	4
y	14	8	2	-4	-10



Daily Practice 16.6.2015

10 Questions Mental Maths

Using a table of values, draw graphs of the following:

(a) $y = -3x + 4$

(b) $y = 0.5x - 2$

(c) $y = -x + 2$

L.I: Today we will be completing an end of topic task for the straight line.

S.C: We will be able to design a check-up for the Straight Line and a marking scheme.

Homework Online due 19.6.2015

Drawing a straight line using its equation

Questions: Draw the following given their equations

State the gradient and the coordinate where the line crosses the y - axis for each

1. y = 2x

2. y = 5x - 1

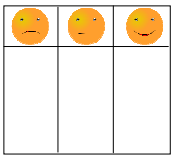
3. y = 0.5x + 2

4. y = -2x + 1

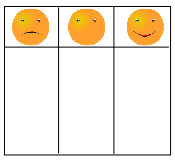
5. y = x - 5

6. y = -x + 3

I can create a table of values given the equation of a line.



I can plot the coordinates and make the graph of a straight line.



Daily Practice 22.6.15

Q1. Multiply out and simplify $7(3x - 1) - (x - 2) + 7x$

$21x - 7 - x + 2 + 7x$

$28x - x - 5$

$27x - 5$

Q2. $2\frac{1}{3} - \frac{7}{8}$ $= \frac{7}{3} - \frac{7}{8} = \frac{56}{24} - \frac{21}{24} = \frac{35}{24} = 1\frac{11}{24}$

Q3. State the gradient of the line joining (2, -1) and (3, -2)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2-(-1)}{3-2} = \frac{-1}{1} = -1$

Q4. State the gradient and the y - intercept of the line $y = 2x - 2$

$m = 2$ $c = -2$