

GRADIENT & EQUATION OF A LINE

GRADIENT

A line that goes up hill from left to right has a positive gradient.

A line that goes downhill from left to right has a negative gradient.

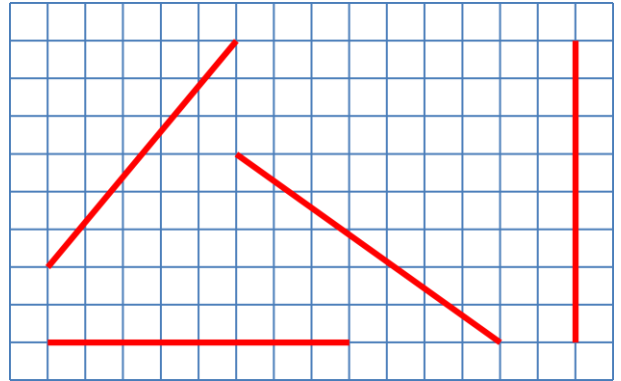
A horizontal line has a gradient 0.

A vertical line has an undefined gradient.

Parallel lines have the same gradient.

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

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

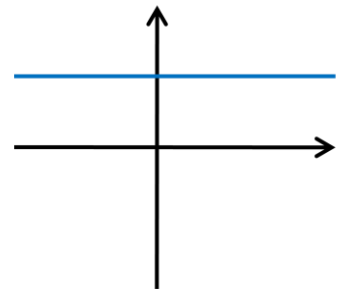


EQUATION OF A STRAIGHT LINE

Horizontal Lines

A horizontal line has equation $y = a$

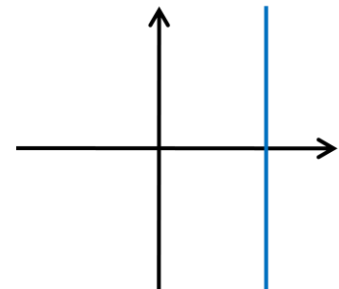
where a is the point that the line crosses the y -axis.



Vertical Lines

A vertical line has equation $x = b$

where b is the point that the line crosses the x -axis.



Diagonal Lines

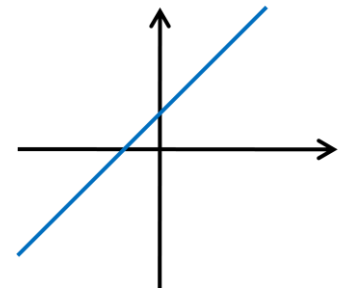
The equation of a diagonal line can be found using the formulae:

$$y = mx + c$$

where m is the gradient and c is the y -intercept.

$$y - b = m(x - a)$$

where m is the gradient and (a, b) is a point on the line.



REARRANGING EQUATIONS

We can rearrange an equation to read the gradient and the y -intercept.

Example: State the gradient and y -intercept of the line with equation $3x + 2y = 5$.

$$3x + 2y = 5$$

$$2y = -3x + 5$$

$$y = -\frac{3}{2}x + \frac{5}{2}$$

$$\text{gradient} = -\frac{3}{2}, \text{ y-intercept} = \frac{5}{2}$$

Gradient & Equation of a Line Practice

http://www.cimt.plymouth.ac.uk/projects/mepres/book9/bk9i5/bk9_5i2.html

Revise gradient and equation of a line.

http://www.cimt.plymouth.ac.uk/projects/mepres/book9/bk9i5/bk9_5i4.html

Revise gradient of parallel lines. Questions 1 to 6.

www.supermathsworld.com Ask your teacher for login details.

Select ALGEBRA from the options.

Select STRAIGHT LINES 1 from the menu. Try on Easy, Medium and Hard level.

Select STRAIGHT LINES 2 from the menu. Try on Easy and Hard level.

<http://www.mathsisfun.com/gradient.html>

Read about gradient. Answer the questions at the bottom of the page.

http://www.bbc.co.uk/bitesize/standard/maths_ii/measure/straight_line_equation/revision/1/

Revise equation of a line. Try the testbite.