

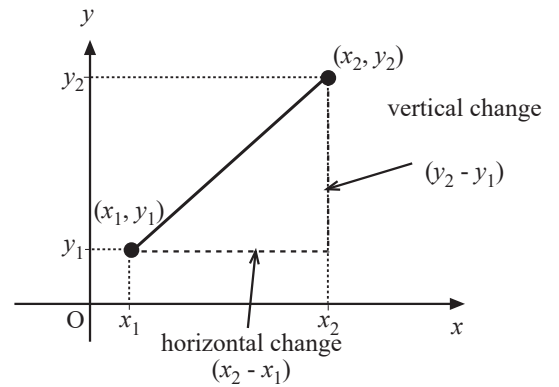
# Straight Lines

## Essential information

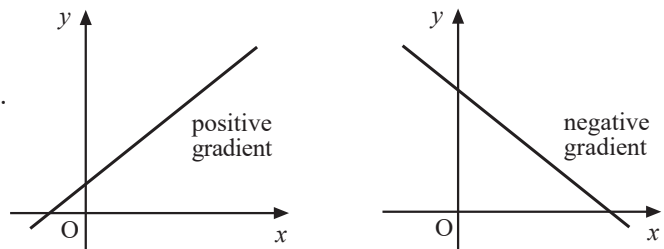
**Gradient of a straight line** describes how steep the line is and is defined as

$$m = \frac{\text{vertical change}}{\text{horizontal change}}$$

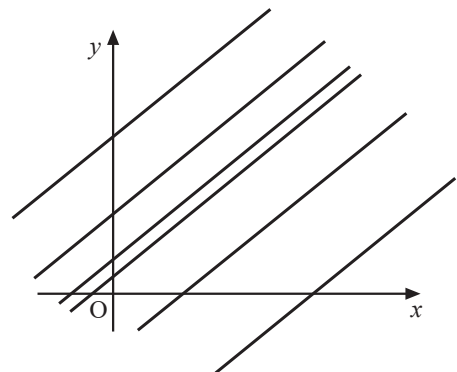
$$= \frac{y_2 - y_1}{x_2 - x_1}$$



The gradient of a line can be positive or negative.



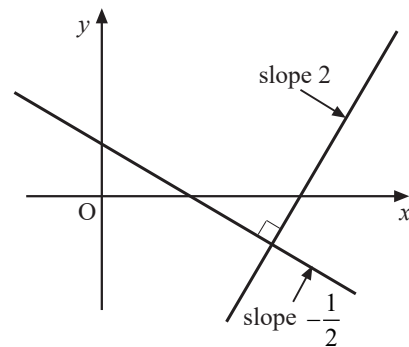
**Parallel lines** lines with the same gradient are parallel to one another.



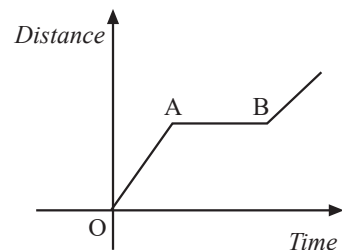
**Perpendicular lines** the product of their gradients is  $-1$  ; for example, see diagram.

In general, if  $m$  is the gradient of one of the

lines  $\left(-\frac{1}{m}\right)$  is the gradient of the other line.



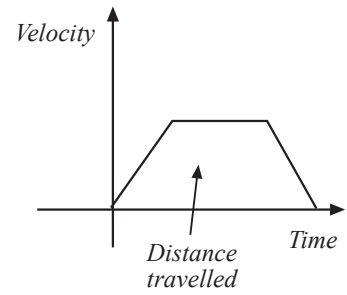
**Distance-time graph** here the gradient represents the velocity;



# Straight Lines

## Essential information

**Velocity-time graph** here the gradient represents the acceleration; the area under the graph is the distance travelled.



**General equation of a straight line is**

$$y = mx + c$$

when  $m$  is the gradient and  $c$  is the  $y$ -axis intercept.

