**FINDING THE EQUATION OF A STRAIGHT LINE GIVEN A POINT AND THE GRADIENT**

Example: Find the equation of a straight line through (3 ; -2) with a gradient of 2.

Solution; Substitute into $y=mx+c$

$$-2=2\left(3\right)+c$$

 $-6-2=c$

 $-8=c$

Therefore: $y=2x-8$

**How to find the gradients Of Parallel Lines?**

In coordinate geometry, two lines are [parallel](https://www.onlinemathlearning.com/pairs-of-lines.html#parallel) if their gradients (*m*) are equal.



For example: The line y = ½ x - 1 is parallel to the line y = ½ x + 1 because their gradients are both the same ($\frac{1}{2}$)

**How to find the equation of a line parallel to a given line and passing through a given point?**
Example: Write the equation of a line that is parallel to the line $y=\frac{1}{2}x-1$ and goes through the point (3, 0).

Solution: $m=\frac{1}{2}$ and point (3 ;0)

Hence: $0=\frac{1}{2}\left(3\right)-c$

 $\frac{-3}{2}=c$

Therefore: $y=\frac{1}{2}x-\frac{3}{2}$

**Exercise 4**

1. Find the equation of a straight line given gradient -1 and a point ( 4 ; -2).
2. Find the equation of a straight parallel to the line $y=-2x-4.$ and passing through the point ( 5 ; 1).