**EQUATIONS OF STRAIGHT LINES**

Remember in your grade 9 you look at straight line functions where the general equation of a straight line was given as$ y=mx+c$**.** The **m** represents the gradient and the **c** represents the **y-intercept** where the line meets the y-axis.

**Example:** Consider the diagram below showing straight line AB, where A( -3; -4) and B(4 ; 3)



You can see that the line meets the y-axis at -1, hence **c = -1.**

**m=** gradient = $\frac{y\_{2-y\_{1}}}{x\_{2-x\_{1}}}$

 = $\frac{3--4}{4--3}$ = $\frac{3+4}{4+3}$ = $\frac{7}{7}=1$

Hence: Equation of the straight-line becomes:

 $y=1x-1$

 **m c**

**NB:** $y=1x-1$ **can be written as**$ y=x-1$**, because of coefficient 1**

**FINDING THE EQUATION OF A STRAIGHT LINE GIVEN TWO POINTS.**

**Example:** Find the equation of a straight line given the points:

 P(2;5) and Q(4;11)

Solution: $y=mx+c$

 $m=\frac{11-5}{4-2}=\frac{6}{2}=3$

So, $y=3x+c$, then substitute any one of the two points above

ie P(2;5) $5=3\left(2\right)+c$

 $5=6+c$

 $c=-1$

Therefore: The equation becomes; $y=3x-1$

**EXERCISE 5**

1. Write down the gradient and y-intercepts of the following lines:
2. $y=4x-5$
3. $y=-x+2$
4. $y=-2x$
5. $y=10$
6. Find the equation of a straight line TR, where(3;6) and R(-1;-6)