

**WEEKLY HOME STUDY PACKAGE - WEEK 5 (02/08/21 – 06/08/21)**

Subject	MATHEMATICS	Year/Level	11
Strand	5 – Coordinate Geometry		
Sub-strand	5.2 – Parallel and perpendicular lines		
Content Learning Outcome	Study and use gradients of parallel and perpendicular lines		

SOLUTION:**ACTIVITIES:**

1. If one line passes through the points (0, -4) and (-1, -7) and another line passes through the points (3, 0) and (-3, 2). Are these lines parallel or perpendicular?

$m_1 = \frac{y_2 - y_1}{x_2 - x_1}$ $m_1 = \frac{-7 - (-4)}{-1 - 0} = \frac{-3}{-1} = 3$	$m_2 = \frac{y_2 - y_1}{x_2 - x_1}$ $m_2 = \frac{2 - 0}{-3 - 3} = \frac{2}{-6} = \frac{-1}{3}$
$m_1 \neq m_2 \therefore$ Lines are not parallel but $m_1 \cdot m_2 = 3 \times \frac{-1}{3} = -1$ Hence Lines are <u>perpendicular</u>	

[2 marks]

2. Find the slope of a line perpendicular to the line $y = -4x + 9$.

$m_1 = -4$ $-4 \times m_2 = -1$ $m_2 = \frac{-1}{-4} = \frac{1}{4}$

[1 mark]

3. What is the equation of a line that passes through the point (-1,-2) and is perpendicular to $-5x = 6y + 18$?

$-5x = 6y + 18$ $6y = -5x - 18$ $m_1 = \frac{-5}{6}$ $\frac{-5}{6} \times m_2 = -1$ $m_2 = \frac{-6}{-5} = \frac{6}{5}$	<p>New Equation: $y = mx + c$</p> $-2 = \frac{6}{5}(-1) + c$ $-2 = \frac{-6}{5} + c$ $c = -0.8 = \frac{-4}{5}$ $y = \frac{6}{5}x - \frac{4}{5}$
---	--

[2 marks]