

## Co-ordinate Geometry : Achieved Practice #5

1. Find the point mid way between  $X = (-1, 2)$  and  $Y = (3, -2)$ .
2. Find the line perpendicular to  $y = 2x + 3$  which passes through  $(-2, 2)$ .
3. Find the distance from point  $A = (-2, 5)$  to point  $B = (-5, 8)$ .
4. Find the equation of the line that passes through both  $G = (0, 4)$  and  $H = (5, 10)$ .
5. Find a line parallel to  $\frac{3x + y}{2} = 4$ , which passes through point  $K = (6, 2)$ .
6. Where does  $y = 3x + 52$  cross the line  $y = 2x + 53$ ?

## Answers – Co-ordinate Geometry : Achieved Practice #5

1. Find the point mid way between X = (-1, 2) and Y = (3, -2).

$$\left(\frac{-1+3}{2}, \frac{2+(-2)}{2}\right)$$

$$= (1, 0)$$

*mid point = (average x, average y)*

*check with sketch*

2. Find the line perpendicular to  $y = 2x + 3$  which passes through (-2, 2).

$$m = 2 \text{ so } m^\perp = \frac{-1}{2} = -0.5$$

$$y - 2 = -0.5(x - (-2))$$

$$y = \frac{-x}{2} + 1$$

*perpendicular lines have  $m^\perp = \frac{-1}{m}$*

*equations found using  $y - y_1 = m(x - x_1)$*

*check with sketch and "Table"*

3. Find the distance from point A = (-2, 5) to point B = (-5, 8).

$$\Delta x = (-2 - (-5)) = 3, \Delta y = (5 - 8) = -3$$

$$\text{Length} = \sqrt{3^2 + (-3)^2}$$

$$= 4.24$$

*distance apart in x and y directions*

$$(-3)^2 = 9, \text{ not } -9$$

*check with sketch*

4. Find the equation of the line that passes through both G = (0, 4) and H = (5, 10).

$$m = \frac{4 - 10}{0 - 5} = \frac{-6}{-5} = \frac{6}{5} \text{ (or } 1.2)$$

$$y - 10 = \frac{6}{5}(x - 5)$$

$$y = 1.2x + 4$$

*slope,  $m = \frac{\Delta y}{\Delta x}$*

*equations found using  $y - y_1 = m(x - x_1)$*

*check with "Table" in calculator*

5. Find a line parallel to  $\frac{3x+y}{2} = 4$ , which passes through point K = (6, 2).

multiply both sides of  $\frac{3x+y}{2} = 4$  gives:  $3x + y = 8$ , which is  $y = -3x + 8$

$$m = -3$$

$$y - 2 = -3(x - 6)$$

$$y = -3x + 20$$

*parallel lines have the same slope*

*equations found using  $y - y_1 = m(x - x_1)$*

*check with "Table" in calculator*

6. Where does  $y = 3x + 52$  cross the line  $y = 2x + 53$ ?

Put into calculator as  $-3x + 1y = 52$  and  $-2x + 1y = 53$

$$(1, 55)$$

*simultaneous equation*