

Co-ordinate Geometry : Achieved Practice #4

1. Find the distance from point A = $(-2, 5)$ to point B = $(-5, 8)$.
2. Find a line parallel to $y = 6 - 3x$, which passes through point K = $(4, 2)$.
3. Find the point equal distance from C = $(1.5, 3)$ and D = $(3.3, 2)$.
4. Find the equation of the line that passes through both E = $(2, 5)$ and F = $(6, 8)$.
5. Find the line perpendicular to $y = -x + 3$ which passes through $(2, -1)$.
6. Find k so that $(2, k)$ is on the line $3y - 4x + 8 = 0$.

Answers – Co-ordinate Geometry : Achieved Practice #4

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

$$\Delta x = (-2 - -5) = 3, \Delta y = (5 - 8) = 3 \quad \text{distance apart in } x \text{ and } y \text{ directions}$$

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

$$= \mathbf{4.24} \quad \text{check with sketch}$$

2. Find a line parallel to $y = 6 - 3x$, which passes through point K = (4, 2).

$$y = 6 - 3x \text{ rearranges to give the more common form } y = -3x + 6$$

$$m = -3 \quad \text{parallel lines have the same slope}$$

$$y - 2 = -3(x - 4) \quad \text{equations found using } y - y_1 = m(x - x_1)$$

$$\mathbf{y = -3x + 14} \quad \text{check with "Table" in calculator}$$

3. Find the point equal distance from C = (1.5, 3) and D = (3.3, 2).

$$\left(\frac{1.5 + 3.3}{2}, \frac{3 + 2}{2}\right) \quad \text{mid point} = (\text{average } x, \text{ average } y)$$

$$= \mathbf{(2.4, 2.5)} \quad \text{check with sketch}$$

4. Find the equation of the line that passes through both E = (2, 5) and F = (6, 8).

$$m = \frac{5 - 8}{2 - 6} = \frac{-3}{-4} = \frac{3}{4} (= 0.75) \quad \text{slope, } m = \frac{\Delta y}{\Delta x}$$

$$y - 5 = \frac{3}{4}(x - 2) \quad \text{equations found using } y - y_1 = m(x - x_1)$$

$$\mathbf{y = \frac{3}{4}x + 3\frac{1}{2}} \quad \text{check with "Table" in calculator}$$

5. Find the line perpendicular to $y = -x + 3$ which passes through (2, -1).

$$m = -1 \text{ so } m^\perp = \frac{-1}{-1} = 1 \quad \text{perpendicular lines have } m^\perp = \frac{-1}{m}$$

$$y - -1 = 1(x - 2) \quad \text{equations found using } y - y_1 = m(x - x_1)$$

$$\mathbf{y = x - 3} \quad \text{check with sketch and "Table"}$$

6. Find k so that (2, k) is on the line $3y - 4x + 8 = 0$.

$$3y - 4x + 8 = 0 \text{ so } 3k - 4 \times 2 + 8 = 0 \quad \text{point must fit equation}$$

$$\mathbf{k = 0}$$

can check by plotting $y = mx + c$ version