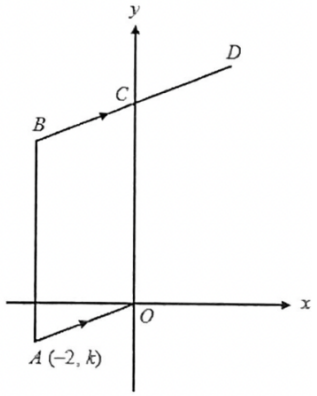
Must Know Questions To Ace
Coordinate Geometry

1.	a) Find the gradient and $y-$ intercept of the line $\frac{x}{2}+\frac{3y}{5}=1$. b) Given that the points A $(3, k)$, B $(1, -2)$ and C $(-4, -6k)$ lie on a straight line, find the value of k. c) The length of the line segment joining the end points P $(1, a)$ and Q $(3a, 14)$ is 13 units. Find the value of a.
2.	In the diagram, AB is parallel to the $y-$axis and AO is parallel to BD. The equation of BD is $2y = x + 12$ and A is the point $(-2, k)$. a) Find the coordinates of C. b) Show that $k = -1$. c) Find the length of AC. d) Find the equation of the line AC. e) Find the area of Triangle ABC. 
3.	The line $3x + 2y = 8$ crosses the $y-$axis at the point M. a) Find the coordinates of the point M. b) Find the gradient of the line. c) Given that the point N $(-10, k)$ lies on the line, find the value of k. d) Calculate the distance of MN.

4.	Find the equation of the line passing through (1 , 7) and parallel to the line passing through ($-3, \frac{7}{2}$) and (2 , 1).
5.	M and N are points (3 , 13) and (7 , 1) respectively. a) Find the equation of the line passing through M and is parallel to $x = -1$. b) Find the equation of the line passing through N and is parallel to $4y - 5x - 10 = 0$. c) Find the coordinates of T, where T is a point on the line $y = 2$ such that M, N and T are collinear.

Answer Key:

1. a) $y = \frac{5}{6}x + 1\frac{2}{3}$

   Gradient = $-\frac{5}{6}$

   y-intercept = $1\frac{2}{3}$

   b) $k = 2$

   c) $a = 1\frac{2}{5}$ *or* $a = 2$

2. a) C (0 , 6)

   c) 7.28 units

   d) $y = \frac{7}{2}x + 6$

   e) 6 units^2

3. a) M (0 , 4)

   b) $-1\frac{1}{2}$

   c) $k = 19$

   d) 18.0 units (3 s.f)

4. $2y = -x + 15$

5. a) $x = 3$

   b) $4y = 5x - 31$

   c) T ($\frac{20}{3}$, 2)