

Backwards Formulas

1. If the line $2x - 3y + 5 = 0$ is perpendicular to $3x + ky - 8 = 0$, find the value of k .
2. Find the value of t if the lines $3x + 4y = 7$ and $2y - tx - 6 = 0$ are perpendicular.
3. Find the value of k if the line $2x + ky - 8 = 0$ contains the point $(3, 1)$.
4. The line h contains the points $(6, -2)$ and $(-4, 10)$. The equation of the line k is $ax + 6y + 12 = 0$ and k is perpendicular to h . Find the value of the real number a .
5. Find in terms of k the coordinates of the points where the line $3x + 4y = k$ cuts the x -axis and y -axis. If the area of the triangle formed by $3x + 4y = k$ and the positive x and y axes is 24 square units, find the value of k .
6. The point $P(-6, y)$ divides the line segment $A(-10, 7)$ and $B(x, -5)$ internally in the ratio 1:3. Find the values of x and y .
7. $A(x, 0)$ and $B(0, y)$ are two points in the plane. The point $C(9, -8)$ divides $[AB]$ internally in the ratio 4:3. Find the values of x and y .
8. $A(4, -3)$ and $B(-2, 0)$ are the end points of a line segment. The point $P(2, -2)$ divides $[AB]$ internally in the ratio $h : k$. Find the ratio $h : k$.
9. $A(4, 6)$, $B(-2, 7)$ and $C(k, -4)$ are the vertices of a triangle. If the coordinates of the centroid of the triangle are $(-1, 3)$, find the value of k .
10. If the point $(-2, a)$ is equidistant from the lines $4x + 3y - 3 = 0$ and $12x + 5y - 13 = 0$, find the value of a , $a \in \mathbb{Z}$.
11. Write down the equation of any line parallel to $4x + 3y + 1 = 0$. Hence find the equations of the two lines which are parallel to the line $4x + 3y + 1 = 0$ and two units from it.
12. Write down the equation of any line that is perpendicular to the line $3x - 4y + 5 = 0$. Now find the equations of the two lines which are perpendicular to the line $3x - 4y + 5 = 0$, if the perpendicular distance from the point $(1, 1)$ to each line is 4 units.
13. Write down the equation of any line through the point $(-4, 2)$. Hence find the equations of the two lines through the point $(-4, 2)$ whose perpendicular distance from the origin is 2.
14. The length of the perpendicular to a line from the origin is 5 units. The line passes through the point $(3, 5)$. Find the equations of two such lines.

15. Find the slopes of the lines which make an angle measuring 45° with the line $2x - 3y + 1 = 0$.
16. Find the equations of the two lines through the origin which make angles of 45° with the line $2x + 3y - 4 = 0$
17. Find the equations of the two lines through the point $(-1,1)$ which makes angles of 45° with the line $2x + y - 2 = 0$.
18. Find the equations of the two lines through the point $(4,2)$ which make angles of $\tan^{-1}(\frac{2}{3})$ with the line $x + y - 2 = 0$.
19. Find the equation of the line such that the $x - axis$ bisects the angle between it and the line $2x - 3y - 6 = 0$.
20. l is the line $tx + y - 7 = 0$.
 - i. Write down the slope of l .
 - ii. If the angle between the line l and the line $y = 2x + 5$ is 45° , find two possible values of t .