

## Perpendicular Lines

- Graphs:

- Lines intersect at a right angle.

change sign + flip

- Equations:

- opposite reciprocal slopes

$3, -\frac{1}{3}$

$-12, \frac{1}{12}$

- different y - intercepts

$-\frac{4}{3}, \frac{5}{4}$

### Writing an Equation of a Line PERPENDICULAR to another and given a point.

- Given equation should be solved for y. ( $y = mx + b$ ).
- Write down the perpendicular slope of that line.
- Substitute the new slope and (x, y) in  $y = mx + b$ . Solve for b.
- Write the equation using m and b.

7. Write a line perpendicular to the line  $y = \frac{1}{2}x - 2$  and passes through the point  $(1, 0)$ .

A.  $y = \frac{1}{2}x - 2$   
 $m = \frac{1}{2}$

B.  $\perp m = -2$

C.  $0 = -2(1) + b$   
 $0 = -2 + b$   
 $2 = b$

D.  $y = -2x + 2$

8. Write a line perpendicular to the line  $y = -3x + 2$  and passes through the point  $(6, 5)$ .

A.  $y = -3x + 2$   
 $m = -3$

B.  $\perp m = \frac{1}{3}$

C.  $5 = \frac{1}{3}(6) + b$   
 $5 = 2 + b$   
 $3 = b$

D.  $y = \frac{1}{3}x + 3$

9. Write a line perpendicular to the line  $2x + 3y = 9$  and passes through the point  $(6, -1)$ .

A.  $2x + 3y = 9$   
 $\frac{3y}{3} = \frac{-2x + 9}{3}$   
 $y = -\frac{2}{3}x + 3$

B.  $\perp m = \frac{3}{2}$

C.  $-1 = \frac{3}{2}(6) + b$   
 $-1 = 9 + b$   
 $-9 - 9$   
 $-10 = b$

D.  $y = \frac{3}{2}x - 10$

10. Write a line perpendicular to the line  $y = 2x - 1$  and passes through the point  $(2, 4)$ .

A.  $y = 2x - 1$   
 $m = 2$

B.  $\perp m = -\frac{1}{2}$

C.  $4 = -\frac{1}{2}(2) + b$   
 $4 = -1 + b$   
 $5 = b$

D.  $y = -\frac{1}{2}x + 5$