

## Warm-up

1) In  $y = mx + b$ , what do  $m$  &  $b$  mean?  
 $m = \text{slope}$      $b = \text{start pt. on } y\text{-axis}$

2) In  $Ax + By = C$ , how do you find the  $x$  &  $y$  intercepts?  
 $x\text{-int: Cover } y \text{ ; solve for } x$      $y\text{-int: Cover } x \text{ ; solve for } y$

3) What invention, still used in parts of the world, lets people see through walls?

windows

## 2.4 Write Equations of Lines

Three Situations:

1) Given slope &  $y$ -intercept, use  $y = mx + b$

ex.  $m = -\frac{4}{3}, b = -5$

$$y = -\frac{4}{3}x - 5$$

2) Given a point & the slope, use point-slope

$$y - y_1 = m(x - x_1), \text{ for slope } m \text{ \& } (x_1, y_1)$$

Ex. Goes thru  $(5, -4), m = -3$

$$y - (-4) = -3(x - 5)$$

\* Slope int form now ...

$$\underset{-4}{y} + 4 = -3x + \underset{-4}{15}$$

$$y = -3x + 11$$

3) Given 2 points, find slope

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \begin{array}{l} \text{1st} \\ \text{pick a point} \end{array} \quad \begin{array}{l} \text{2nd} \\ \text{use} \end{array}$$

point slope form

Ex. Goes thru A(5, -2) and B(2, 10)

$$\text{1st: } m = \frac{10 - (-2)}{2 - 5} = \frac{12}{-3} = \textcircled{-4}$$

$$\text{2nd: } y - y_1 = m(x - x_1)$$

Use A(5, -2);  $m = -4$    OR   use B(2, 10);  $m = -4$

$$y - (-2) = -4(x - 5)$$

$$\textcircled{y + 2 = -4(x - 5)}$$

OR

$$\textcircled{y - 10 = -4(x - 2)}$$

$$Y = -x + 3$$

$$m = -1$$

$$\parallel m = -1$$

$$( , ) \dot{\text{;}} m = -1$$

$$Y = \frac{1}{2}x - 7$$

$$m = \frac{1}{2}$$

$$\perp m = -2$$