## 4.5: Graph Lines Using Slope - Intercept Form

*GOAL* - Rewrite equations so they are in slope - intercept form

- Identify slope and $y$-intercept of a line from an equation
- Identify slope and $y$-intercept of a line graphed
- Use slope - intercept form to graph a line


## Slope - Intercept Form:

| $y=m x+b$ |
| :---: |
| $m=$ slope, always the coefficient of $x$ |
| $b=y$-intercept, always being added or subtracted |
|  |

Write the following equations in slope - intercept form if necessary, then identify the slope and the $y$-intercept:

Ex: $y=3 x+4$
$m=3, b=4$
Ex: $y=-3 x+2$

$$
m=-3, b=2
$$

Ex: $y=5 x-3$

$$
m=5, b=-3
$$

$\mathbf{E x}: \quad y=-\frac{1}{3} x+3$
$m=-\frac{1}{3}, b=3$

Ex: $y=-\frac{1}{4} x+1.5$
Ex: $-x+y=4$

$$
m=-\frac{1}{4}, b=1.5
$$

$$
\begin{aligned}
& +x \quad+x \\
& y=4+x \\
& m=1, b=4
\end{aligned}
$$

## Graph an equation of a line using slope - intercept form:

1. Make sure the equation is written in $\qquad$ slope-intercept form $\qquad$ .
2. Identify $\qquad$ slope $\qquad$ and $\qquad$ $y$-intercept $\qquad$

- make sure the slope is written as a $\qquad$ fraction $\qquad$ so you can identify
$\qquad$ rise $\qquad$ and $\qquad$ run $\qquad$

3. Graph $\qquad$ $y$-intercept $\qquad$ first. Your only choices are $\qquad$ up $\qquad$ or
$\qquad$ down $\qquad$ .
4. Moving from the $y$-intercept go where the $\qquad$ rise $\qquad$ and
$\qquad$ run $\qquad$ tells you to go.
5. Plot multiple points and connect.

## Graph using slope - intercept form:

Ex: $y=-2 x+3$


Ex: $y=-2 x+5$

$\mathbf{E x}: \quad y=\frac{1}{2} x+2$


$$
\text { Ex: } y=\frac{3}{4} x
$$



$$
\mathbf{E x}: \quad y=-\frac{2}{5} x+1
$$



Ex: $y=-\frac{2}{3} x+4$


Ex: $-x+y=3$


Ex: $\quad y=\frac{4}{3} x+2$


