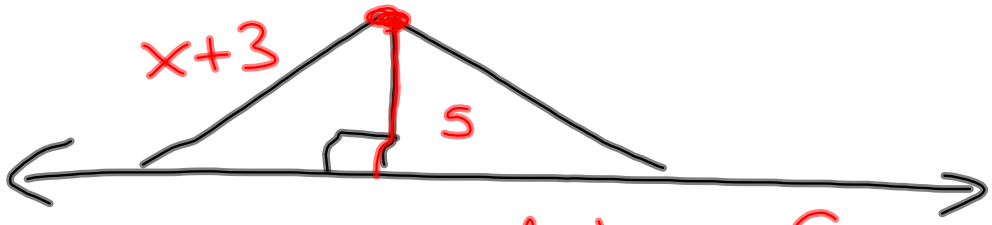
3.4 Perpendicular Lines



- the shortest distance from a point to a line is the ⊥ segment from the point to the line.

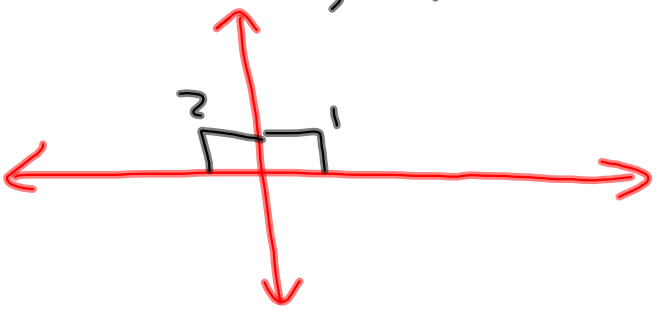
Ex: setup and solve an inequality for x

$$5 < x+3$$
$$-3 \quad -3$$
$$2 < x$$

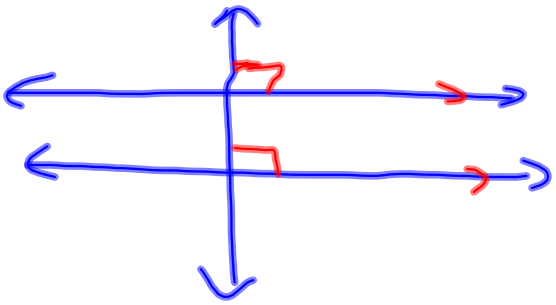
$$x > 2$$

Theorems

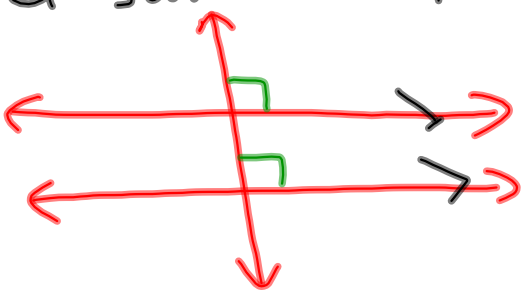
1. 3-4-1: If 2 intersecting lines form a linear pair of $\cong$ $\angle$'s, then the lines are $\perp$.



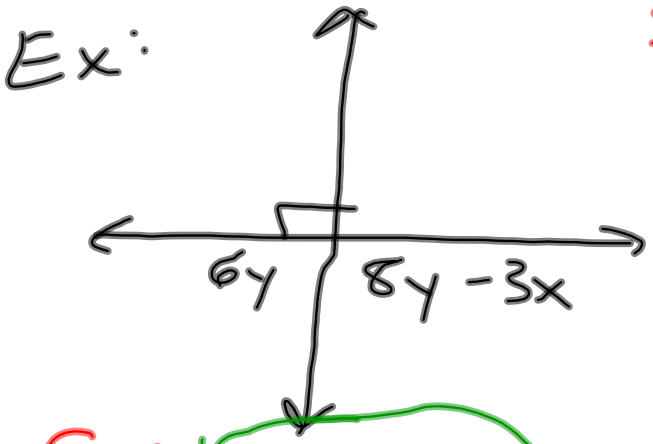
2. $\perp$ transversal theorem: if a transversal is $\perp$ to one of two $\parallel$ lines, then it has to be $\perp$ to the other line.



3. 3-4-3: if 2 lines are $\perp$ to the same line, then the lines are $\parallel$.



Ex:



Solve for x + y.

$$\begin{cases} 8y - 3x = 90 \\ 6y = 90 \end{cases}$$

$6y = 90$

$y = 15$

$8(15) - 3x = 90$

$120 - 3x = 90$

$-120 \quad -120$

$-3x = -30$

$\frac{-3x}{-3} = \frac{-30}{-3}$

$x = 10$

Hw: p. 175
1-22 all