

## WARMUP

$$A = \{1, 2, 3, 4\} \quad B = \{3, 4, 5, 6, 7\}$$

1) Name the numbers that are common to both sets.

3, 4

2) Name the numbers that are in set A or set B or in both set A and B.

1, 2, 3, 4, 5, 6, 7

## 10 on 9.1 Worksheet

$$\begin{array}{l} \text{ABC} \quad C = 21 + 0.08m \\ \quad \quad \quad \uparrow \quad \quad \quad \uparrow \\ \quad \quad \quad \text{up front} \quad \quad \quad 8¢ \text{ per minute} \end{array}$$

$$\text{XYZ} \quad C = 15 + 0.10m$$

If XYZ is a better deal, then its cost is lower

$$\begin{array}{r} 15 + 0.10m < 21 + 0.08m \\ \quad \quad \quad -0.08m \quad \quad \quad -0.08m \\ \hline \cancel{15} + 0.02m < 21 \\ \cancel{-15} \quad \quad \quad -15 \\ \hline \frac{0.02m}{0.02} < \frac{6}{0.02} \end{array}$$

$$m < 300 \text{ minutes}$$

$$\begin{aligned} \text{ii) } C &= 8000 + 0.08x \\ R &= 1.85x \end{aligned}$$

$$P = R - C$$

$$P = 1.85x - (8000 + 0.08x) > 0$$

$$1.85x - 8000 - 0.08x > 0$$

$$1.77x - 8000 > 0$$

$$\frac{1.77x}{1.77} > \frac{8000}{1.77}$$

$$x > 4519.77$$

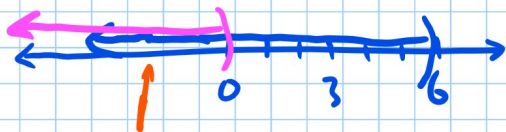
Wash 4,520 or more cars  
to make a profit

## Section 9.2 Compound Inequalities

Intersection:  $A \cap B$  means numbers common to both sets  
↑  
"and"

$$\text{ex: } \{7, 8, 9, 10, 11\} \cap \{6, 8, 10, 12\} \\ = \{8, 10\}$$

$$\text{ex: } x < 6 \text{ and } x < 0$$



both colors

So that's your intersection



$$(-\infty, 0)$$

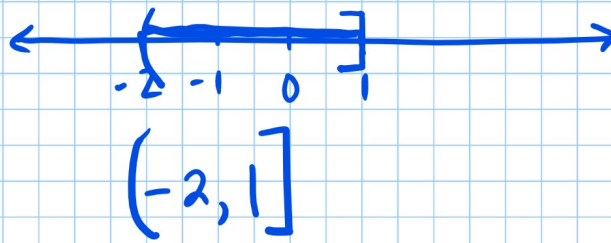
$$\text{ex: } \begin{array}{l} x-3 < 5 \\ +3 \quad +3 \\ \hline x < 8 \end{array} \quad \text{and} \quad \begin{array}{l} 2x+4 < 14 \\ \frac{2x}{2} < \frac{10}{2} \\ x < 5 \end{array}$$



intersection is

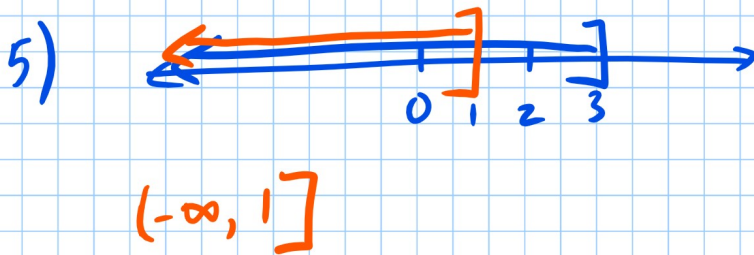
$$x < 5 \\ (-\infty, 5)$$

$$\begin{aligned} \text{ex: } & -3 < 2x+1 \leq 3 \\ & \frac{-4}{2} < \frac{2x}{2} \leq \frac{2}{2} \\ & -2 < x \leq 1 \end{aligned}$$

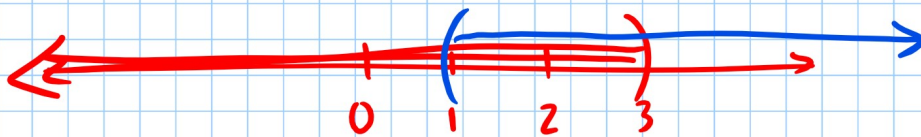


Worksheet 9.2 1, 2, 5-9

If  $A \cap B$  has no numbers then answer is  $\emptyset$



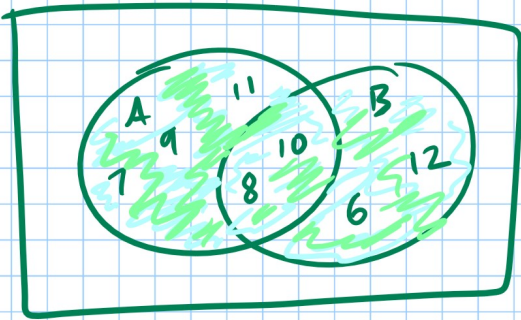
$$\begin{aligned} 6) \quad & 4x < 12 & x+4 > 5 \\ & x < 3 & \text{and} & x > 1 \end{aligned}$$



so double shaded region is  $(1, 3)$

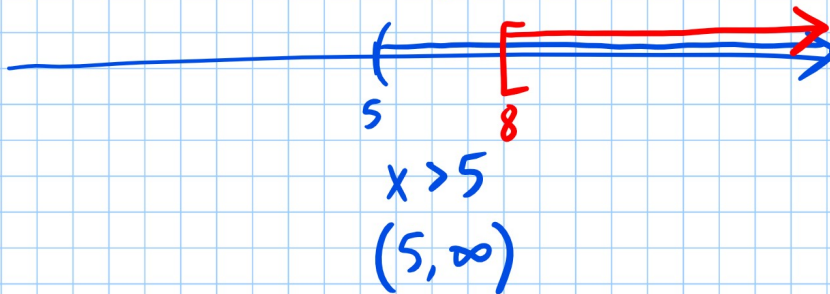
Union:  $A \cup B$  means numbers in A or in B or in both.  
"or"

$$\text{ex: } \{7, 8, 9, 10, 11\} \cup \{6, 8, 10, 12\} \\ = \{7, 8, 9, 10, 11, 6, 12\}$$



$$\text{ex: } \begin{array}{r} 2x - 3 > 7 \\ +x \quad +3 \\ \hline 3x > 10 \\ \frac{3x}{3} > \frac{10}{3} \\ x > 5 \end{array} \quad \text{or} \quad \begin{array}{r} 35 - 4x \leq 3 \\ -35 \quad -35 \\ \hline -4x \leq -32 \\ \frac{-4x}{-4} \leq \frac{-32}{-4} \\ x \geq 8 \end{array}$$

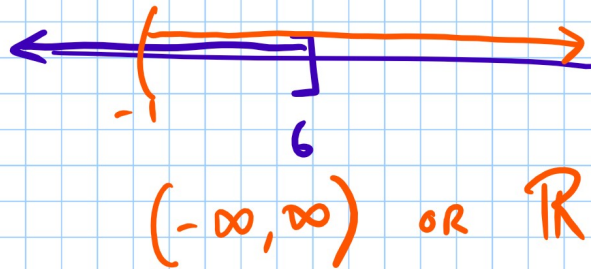
OR  
≡



For OR the answer is whatever is shaded  
For AND the answer is what is double-shaded

$$\text{ex: } \begin{array}{l} 3x - 5 \leq 13 \\ +5 \quad +5 \end{array} \quad \text{or} \quad \begin{array}{l} 5x + 2 > -3 \\ -2 \quad -2 \end{array}$$

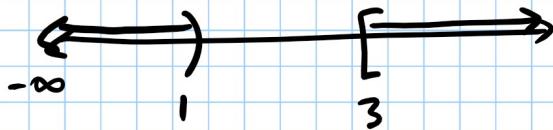
$$\begin{array}{l} 3x = 18 \\ \frac{3x}{3} = \frac{18}{3} \\ x = 6 \end{array} \quad \text{or} \quad \begin{array}{l} 5x > -5 \\ \frac{5x}{5} > \frac{-5}{5} \\ x > -1 \end{array}$$



Finish 9.2 worksheet

For 11  $(-\infty, 1) \cup [3, \infty)$

$$\begin{array}{l} 11) \quad -4x \leq -12 \\ \quad \quad x \geq 3 \end{array} \quad \begin{array}{l} 4x > 12x - 8 \\ -8x > -8 \\ x < 1 \end{array}$$



$(-\infty, 1) \cup [3, \infty)$