

Which of the following numbers is between 1 and 2?

- (A) $\frac{7}{9}$
- (B) $\frac{7}{3}$
- (C) $\frac{9}{4}$
- (D) $\frac{10}{7}$
- (E) $\frac{12}{5}$

If $2x + 4 = b$, then $6x + 12 = ?$

- (A) $b + 3$
- (B) $b + 12$
- (C) $3b$
- (D) $3b + 3$
- (E) $3b + 12$

$$\begin{array}{r} 2x + 4 = b \\ -4 \quad -4 \\ \hline 2x = b - 4 \\ \frac{2x}{2} = \frac{b-4}{2} \end{array}$$

$$x = \frac{1}{2}b - 2$$

$$6\left(\frac{1}{2}b - 2\right) + 12 = 3b - 12 + 12$$

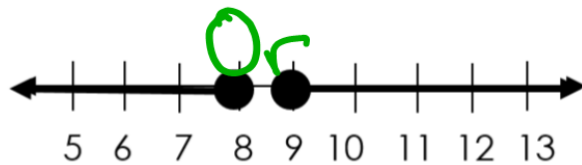
Notes: Solving Compound Inequalities

And
Or

shade in middle
shade outside

Write a compound inequality for each graph.

1.



$$\underline{x \leq 8 \text{ or } x \geq 9}$$

2.



$$\underline{-2 \leq x < 0}$$

$$x \geq -2 \text{ and } x < 0$$

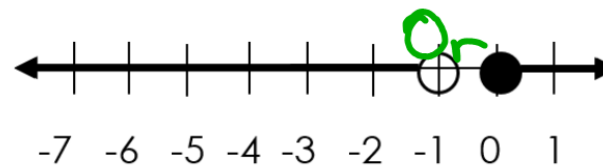
3.



$$\underline{5 < x < 7}$$

$$x > 5 \text{ and } x < 7$$

4.



$$\underline{x < -1 \text{ or } x \geq 0}$$

Solve and graph the solution using a number line.

5. $\frac{3x}{3} \leq \frac{18}{3}$ and $x + 4 > 2$
 $\underline{-4}$ $\underline{-4}$

$x \leq 6$ and $x > -2$



6.

$$\begin{array}{r}
 3x + 6 > 9 & \text{and} & 6x + 12 < 30 \\
 \underline{-6 \quad -6} & & \underline{-12 \quad -12} \\
 3x > 3 & & 6x < 18 \\
 \underline{\quad 3} & & \underline{\quad 6} \\
 x > 1 & & x < 3
 \end{array}$$

$$x > 1 \text{ and } x < 3$$



7.

$$3 \leq 2x + 1 \leq 7$$

and

$$\begin{array}{r} -1 \qquad -1 \qquad -1 \\ \hline 2 \leq 2x \leq 6 \\ \hline \frac{2}{2} \leq \frac{2x}{2} \leq \frac{6}{2} \end{array}$$

$$1 \leq x \leq 3$$



8.

$$\begin{array}{r}
 -4 \leq 3x + 2 \leq 11 \\
 \underline{-2 \quad -2 \quad -2} \\
 -6 \leq \cancel{3}x \leq 9 \\
 \underline{\quad \quad \quad} \\
 -2 \leq x \leq 3
 \end{array}$$



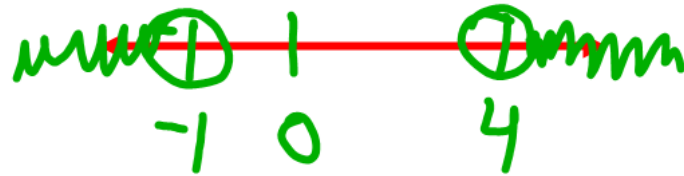
9.

$$x - 3 > 1 \quad \text{or} \quad x + 2 < 1$$

$$+3 \quad +3$$

$$-2 \quad -2$$

$$x > 4 \quad \text{or} \quad x < -1$$



10. $2x - 3 \geq 7$ or $x + 5 < 2$

$$\begin{array}{r} +3 \quad +3 \\ \hline 2x \geq 10 \\ \frac{2x}{2} \geq \frac{10}{2} \end{array}$$

$$\begin{array}{r} -5 \quad -5 \\ \hline x < -3 \end{array}$$

↓

$x \geq 5$ or $x < -3$