

Section 2.5 Solving Compound Inequalities

compound inequality: an inequality formed by joining two inequalities with

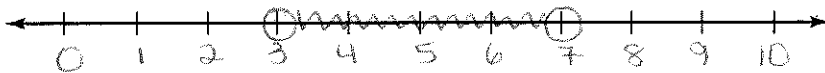
the word and or the word or

Extra Practice

Write the sentence as an inequality. Graph the inequality.

1. A number u is less than 7 and greater than 3.

$$\{u \mid u < 7 \text{ and } u > 3\} \longrightarrow \{u \mid 3 < u < 7\}$$



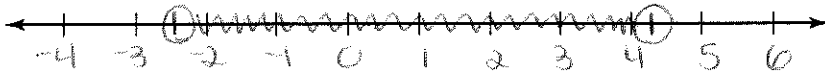
2. A number d is less than -2 or greater than or equal to 2 .

$$\{d \mid d < -2 \text{ or } d \geq 2\}$$



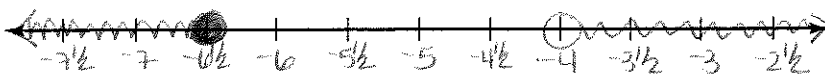
3. A number s is no less than -2.4 and fewer than 4.2 .

$$\{s \mid s \geq -2.4 \text{ and } s < 4.2\} \longrightarrow \{s \mid -2.4 \leq s < 4.2\}$$



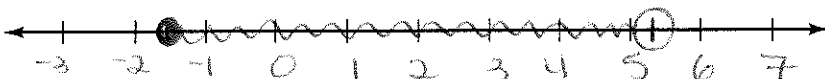
4. A number c is more than -4 or at most $-6\frac{1}{2}$.

$$\{c \mid c > -4 \text{ or } c \leq -6\frac{1}{2}\}$$



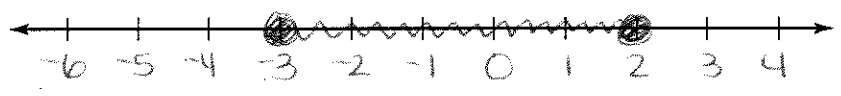
5. A number c is no less than -1.5 and less than 5.3 .

$$\{c \mid c \geq -1.5 \text{ and } c < 5.3\} \longrightarrow \{c \mid -1.5 \leq c < 5.3\}$$



$$6. \quad \frac{15}{-5} \geq \frac{-5g}{-5} \geq \frac{-10}{-5}$$

$$\{g \mid -3 \leq g \leq 2\}$$

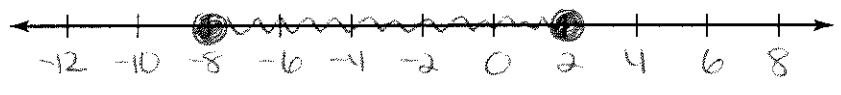


$$7. \quad -8 \leq \frac{1}{3}(6x + 24) \leq 12$$

$$\frac{-8}{-8} \leq \frac{2x + 8}{-8} \leq \frac{12}{-8}$$

$$\frac{-16}{2} \leq \frac{2x}{2} \leq \frac{4}{2}$$

$$\{x \mid -8 \leq x \leq 2\}$$



$$8. \quad z + 4 < 2 \text{ or } -3z < -27$$

$$\frac{-4}{z} < \frac{-4}{z} \quad \left\{ \begin{array}{l} \frac{-3}{-3} \\ \frac{-27}{-3} \end{array} \right.$$

$$z < -2 \quad \left\{ \begin{array}{l} z < -2 \\ z > 9 \end{array} \right.$$

$$\{z \mid z < -2 \text{ or } z > 9\}$$

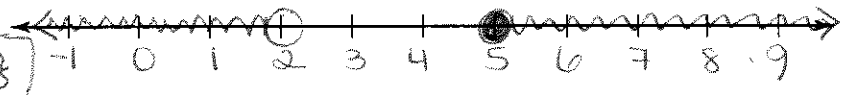


$$9. \quad 2t + 6 < 10 \text{ or } -t + 7 \leq 2$$

$$\frac{-6}{2} < \frac{-6}{2} \quad \left\{ \begin{array}{l} \frac{-7}{-1} \\ \frac{-7}{-1} \end{array} \right.$$

$$t < 2 \quad \left\{ \begin{array}{l} t < 2 \\ t \geq 5 \end{array} \right.$$

$$\{t \mid t < 2 \text{ or } t \geq 5\}$$



10. A certain machine operates properly when the relative humidity h satisfies the inequality $-60 \leq 2(h - 50) \leq 60$. Solve for h to find the range of values for which the machine operates properly.

$$\frac{-60}{+100} \leq \frac{2h - 100}{+100} \leq \frac{60}{+100}$$

$$\frac{40}{2} \leq \frac{2h}{2} \leq \frac{160}{2}$$

$$\{h \mid 20 \leq h \leq 80\}$$