

## Homework: Linear Inequalities for One Variable - Key

In Problems 1-4, write each inequality using interval notation. Graph the inequality

1. $[-3, 8]$ <p>A number line with a closed bracket at -3 and a closed bracket at 8. The segment between -3 and 8 is shaded.</p>	2. $(5, 8]$ <p>A number line with an open parenthesis at 5 and a closed bracket at 8. The segment between 5 and 8 is shaded.</p>
3. $(-\infty, -3)$ <p>A number line with an open parenthesis at -3 and an arrow pointing to the left. The region to the left of -3 is shaded.</p>	4. $[9, \infty)$ <p>A number line with a closed bracket at 9 and an arrow pointing to the right. The region to the right of 9 is shaded.</p>

In Problems 5-8, write each interval as an inequality involving  $x$ . Graph each inequality

5. $x \geq 2$ <p>A number line with a closed bracket at 2 and an arrow pointing to the right. The region to the right of 2 is shaded.</p>	6. $3 < x < 8$ <p>A number line with an open parenthesis at 3 and an open parenthesis at 8. The segment between 3 and 8 is shaded.</p>
7. $x < 5$ <p>A number line with an open parenthesis at 5 and an arrow pointing to the left. The region to the left of 5 is shaded.</p>	8. $-8 \leq x < 7$ <p>A number line with a closed bracket at -8 and an open parenthesis at 7. The segment between -8 and 7 is shaded.</p>

In Problems 9-22, solve each linear inequality. Write the solution using set-builder notation and interval notation. Graph the solution set

9. $x < -4$ $\{x \mid x < -4\}$ $(-\infty, -4)$ <p>A number line with an open parenthesis at -4 and an arrow pointing to the left. The region to the left of -4 is shaded.</p>	10. $x \geq 5$ $\{x \mid x \geq 5\}$ $[5, \infty)$ <p>A number line with a closed bracket at 5 and an arrow pointing to the right. The region to the right of 5 is shaded.</p>
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11.

$$x \geq -4$$

$$\{x \mid x \geq -4\}$$

$$[-4, \infty)$$

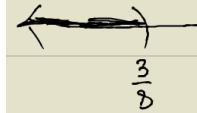


12.

$$x < \frac{3}{8}$$

$$\left\{x \mid x < \frac{3}{8}\right\}$$

$$\left(-\infty, \frac{3}{8}\right)$$

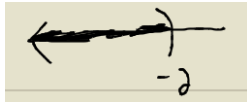


13.

$$x < -2$$

$$\{x \mid x < -2\}$$

$$(-\infty, -2)$$

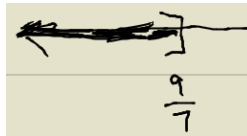


14.

$$x \leq \frac{9}{7}$$

$$\left\{x \mid x \leq \frac{9}{7}\right\}$$

$$\left(-\infty, \frac{9}{7}\right]$$

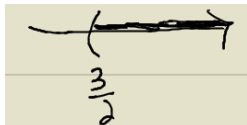


15.

$$x > \frac{3}{2}$$

$$\left\{x \mid x > \frac{3}{2}\right\}$$

$$\left(\frac{3}{2}, \infty\right)$$

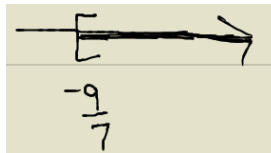


16.

$$x \geq \frac{-9}{7}$$

$$\left\{x \mid x \geq \frac{-9}{7}\right\}$$

$$\left[\frac{-9}{7}, \infty\right)$$



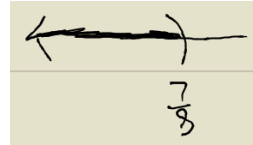
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17.

$$x < \frac{7}{8}$$

$$\left\{ x \mid x < \frac{7}{8} \right\}$$

$$\left( -\infty, \frac{7}{8} \right)$$

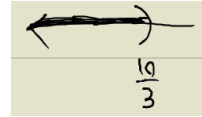


18.

$$x < \frac{10}{3}$$

$$\left\{ x \mid x < \frac{10}{3} \right\}$$

$$\left( -\infty, \frac{10}{3} \right)$$

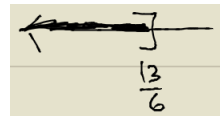


19.

$$x \leq \frac{13}{6}$$

$$\left\{ x \mid x \leq \frac{13}{6} \right\}$$

$$\left( -\infty, \frac{13}{6} \right]$$

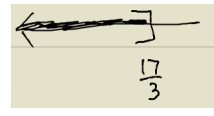


20.

$$x \leq \frac{17}{3}$$

$$\left\{ x \mid x \leq \frac{17}{3} \right\}$$

$$\left( -\infty, \frac{17}{3} \right]$$

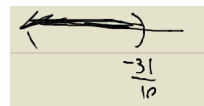


21.

$$x < \frac{-31}{10}$$

$$\left\{ x \mid x < \frac{-31}{10} \right\}$$

$$\left( -\infty, \frac{-31}{10} \right)$$



22.

$$x \leq \frac{-1}{12}$$

$$\left\{ x \mid x \leq \frac{-1}{12} \right\}$$

$$\left( -\infty, \frac{-1}{12} \right]$$

