Foundations of Algebra
Day 9: Solving Inequalities
Practice Assignment

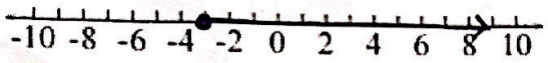
Unit 4: Equations & Inequalities

Name: Key Practice

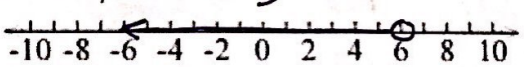
0 25 50 75 100

Graph the inequalities on a number line:

1. $m \geq -3$

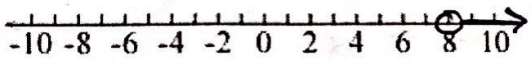


2. $6 > y \rightarrow y < 6$



3. $-1 \leq x \rightarrow x \geq -1$

4. $8 < a \rightarrow a > 8$

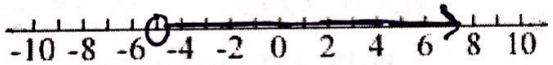


Solve and graph each inequality.

5. $x - 3 > -8$

$+3 \quad +3$

$x > -5$

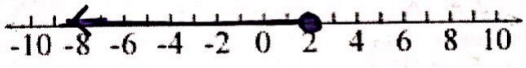


6. $4x + 1 \leq 9$

$-1 \quad -1$

$\frac{4x}{4} \leq \frac{8}{4}$

$x \leq 2$

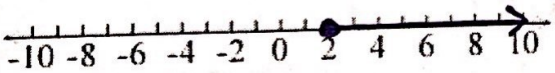


7. $21 \leq 3 + 9x$

$-3 \quad -3$

$\frac{18}{9} \leq \frac{9x}{9}$

$2 \leq x \rightarrow x \geq 2$

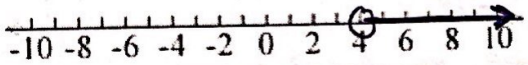


8. $7 < 4q - 9$

$+9 \quad +9$

$\frac{16}{4} < \frac{4q}{4}$

$4 < q \rightarrow q > 4$



Solve and graph each inequality on your own number.

9. $\frac{x}{4} - 3 \leq 9$

$+3 \quad +3$

$4 \cdot \frac{x}{4} \leq 12 \cdot 4$

$x \leq 48$

10. $4 \cdot \frac{x-6}{4} \neq 2 \cdot 4$

$x - 6 \neq 8$

$+6 \quad +6$

$x \neq 14$

11. $2m + 2 - 3 \leq 9$

$2m - 1 \leq 9$

$+1 \quad +1$

$\frac{2m}{2} \leq \frac{10}{2}$

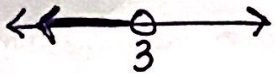
$\boxed{m \leq 5}$

12. $7a - 6 < 15$

$+6 \quad +6$

$\frac{7a}{7} < \frac{21}{7}$

$\boxed{a < 3}$



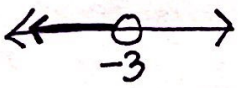
13. $6 + \frac{2}{3}x < 4$

$-6 \quad -6$

$\frac{3}{2} \cdot \frac{2}{3}x < -2 \cdot \frac{3}{2}$

$x < \frac{-6}{2}$

$\boxed{x < -3}$



14. $3(x - 3) + 5x > -3x - 20$

$3x - 9 + 5x > -3x - 20$

$8x - 9 > -3x - 20$

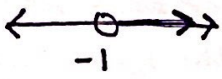
$+3x \quad +3x$

$11x - 9 > -20$

$+9 \quad +9$

$\frac{11x}{11} > \frac{-11}{11}$

$\boxed{x > -1}$



15. A list of possible solutions for an inequality is shown below. Circle the solutions that make the inequality true. Then list three additional solutions to the inequality.

Inequality: $\frac{8}{4} < \frac{4x}{4}$

$2 < x$

$\boxed{x > 2}$

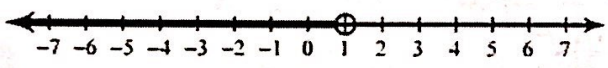
Possible Solutions: -2, -1, 0, 1, 2, (3), (4), (5)

Three Additional Solutions:

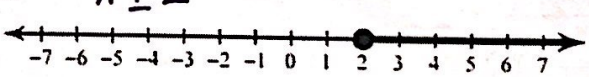
10, 15, 18
(answers will vary)

16. Write the inequality shown by each graph:

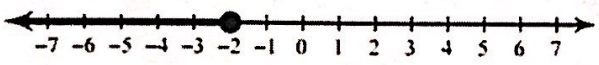
a. $x < 1$



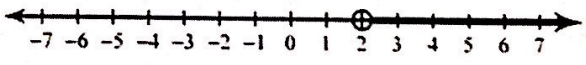
b. $x \geq 2$



c. $x \leq -2$



d. $x > 2$



e. Explain how to write an inequality that is modeled by a graph. What characteristics do you look for in the graph?

I look for whether the circle is open or closed and the direction of the line that represents the solutions.