

# Equations & Inequalities

6th  
Grade

$x \geq$ 	$x \leq$ 
$x >$ 	$x <$ 



Three-fourth of me is 9.  
What number am I?



## Workbook 1

## Translating Phrases: One-Step Equations

Translate each verbal phrase into an algebraic expression.

1) Sum of  $x$  and 3 gives 5

\_\_\_\_\_

2) 2 multiplied by  $b$  is equal to 8

\_\_\_\_\_

3) Difference between  $y$  and 23 is 12

\_\_\_\_\_

4) Product of 4 and  $z$  is the same as 16

\_\_\_\_\_

5) Total of  $m$  and 3 is 21

\_\_\_\_\_

6)  $b$  divides 6 gives 1

\_\_\_\_\_

7)  $n$  minus 2 is equal to 16

\_\_\_\_\_

8) 11 times  $p$  is 33

\_\_\_\_\_

9) 20 exceeds  $c$  gives 18

\_\_\_\_\_

10) One-half of  $x$  is equal to 3

\_\_\_\_\_

## One-Step Equations: Integers

Solve each equation.

1)  $x + 9 = 12$

2)  $s - 1 = 10$

3)  $3 = z - 11$

4)  $5 + y = 7$

5)  $8 = 2 + q$

6)  $6 = n - 4$

7)  $r - 2 = 5$

8)  $6 = m + 6$

9)  $p + 7 = 8$

10)  $4 + a = 13$

## One-Step Equations: Fractions

Solve each equation.

1)  $a + \frac{3}{4} = -\frac{1}{4}$

2)  $c - \frac{2}{7} = \frac{8}{7}$

3)  $\frac{7}{5} = g - \frac{6}{5}$

4)  $\frac{2}{3} = \frac{1}{3} + k$

5)  $\frac{5}{6} = m + \frac{1}{6}$

6)  $p - \frac{3}{2} = \frac{9}{2}$

7)  $-\frac{7}{9} = r - \frac{5}{9}$

8)  $t + \frac{1}{4} = \frac{5}{4}$

9)  $\frac{4}{3} = v + \frac{8}{3}$

10)  $x - \frac{9}{8} = -\frac{3}{8}$

## One-Step Equations: Decimals

Solve each equation.

1)  $x + 3.8 = 4$

2)  $9.6 + m = -0.4$

3)  $-2 = k - 7.1$

4)  $6.3 = 2.3 + b$

5)  $z - 0.6 = 3.7$

6)  $9 = n + 8.6$

7)  $p - 5.1 = -2.4$

8)  $a + 2.5 = 2.5$

9)  $3.2 = 6.8 + u$

10)  $0.9 = r - 9.9$

## One-Step Equations

Solve each equation.

1)  $8 = 6 + q$

2)  $-4.6 = r - 3.3$

3)  $\frac{7}{6} + x = \frac{5}{6}$

4)  $10 = -2 + v$

5)  $\frac{4}{3} = y - 4\frac{2}{5}$

6)  $k + 6.5 = 9.1$

7)  $w - 7.6 = 1.2$

8)  $z - 3 = -5$

9)  $-5\frac{1}{2} = n + \frac{1}{4}$

10)  $s - \frac{1}{7} = -\frac{2}{7}$

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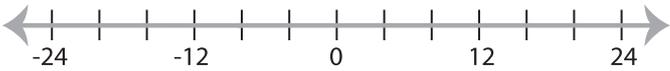
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## Solving & Graphing Inequalities

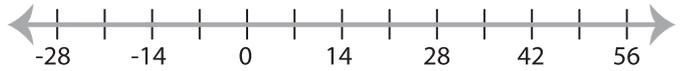
D

Solve each inequality and graph the solution.

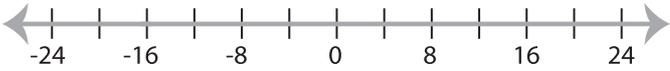
1)  $-48 < 6x$



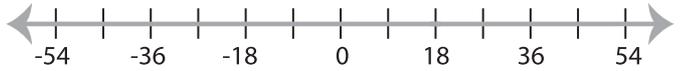
2)  $-4 \geq x + 10$



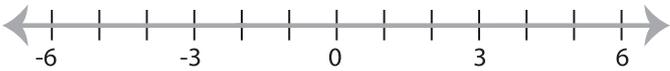
3)  $\frac{x}{2} \geq -8$



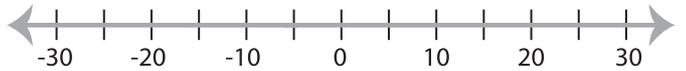
4)  $15 < x - 3$



5)  $-4x \leq 8$



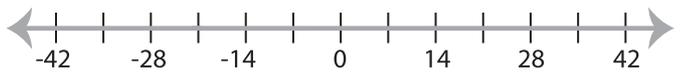
6)  $-25 \geq 5x$



7)  $-7 > \frac{x}{11}$



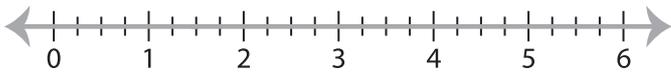
8)  $x - 2 < -23$



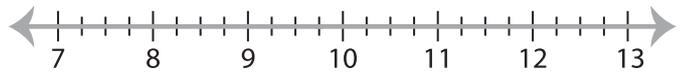
## Solving & Graphing Inequalities

Solve each inequality and graph the solution.

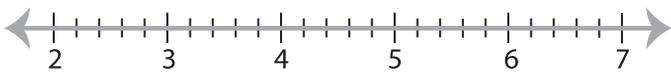
1)  $x + \frac{1}{2} \geq 2$



2)  $x - \frac{3}{4} < 9$



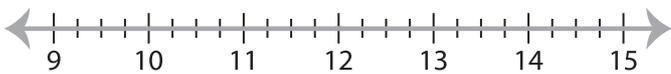
3)  $\frac{11}{5} \leq \frac{1}{2}x$



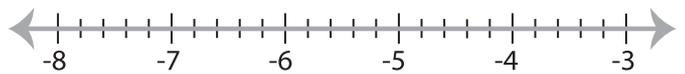
4)  $-4 > x + \frac{7}{3}$



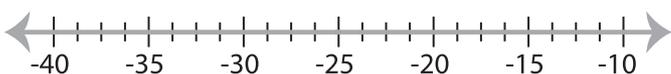
5)  $\frac{3}{2} < \frac{x}{8}$



6)  $-6 > x - \frac{1}{5}$



7)  $\frac{x}{5} \leq -5$



8)  $-\frac{35}{4} \geq 7x$



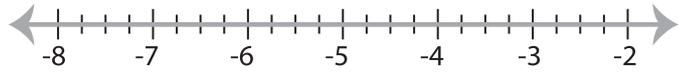
## Solving & Graphing Inequalities

Solve each inequality and graph the solution.

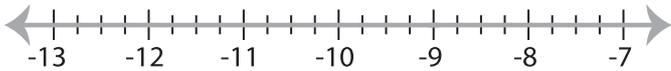
1)  $x - 12.7 < -16.5$



2)  $-1.8 > \frac{x}{2.5}$



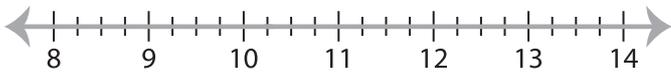
3)  $3.19 + x \leq -5.81$



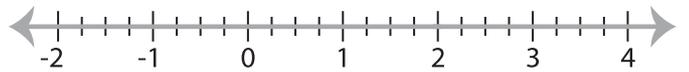
4)  $1.5x \geq -21.9$



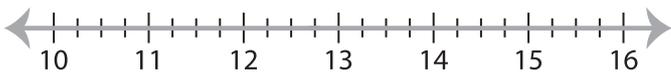
5)  $6.13 \geq x - 4.12$



6)  $10 \leq \frac{x}{0.2}$



7)  $x + 36.21 > 48.96$



8)  $-19.04 < 3.4x$

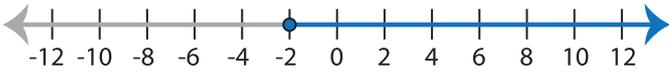


# Identifying Inequalities

E

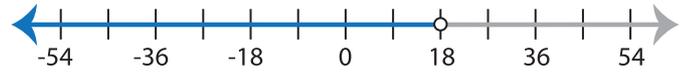
Choose the correct inequality that best describes each graph.

1)



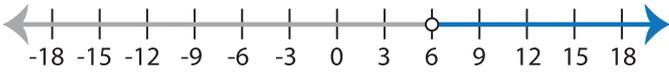
- |                   |                   |
|-------------------|-------------------|
| a) $x + 8 \geq 6$ | b) $x + 8 < 6$    |
| c) $x + 8 > 6$    | d) $x + 6 \leq 8$ |

2)



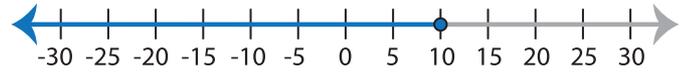
- |                         |                         |
|-------------------------|-------------------------|
| a) $\frac{x}{9} \geq 2$ | b) $\frac{x}{9} > 2$    |
| c) $\frac{x}{2} < 9$    | d) $\frac{x}{2} \leq 9$ |

3)



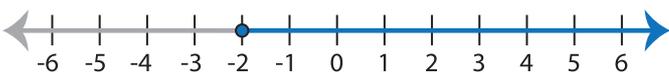
- |                 |              |
|-----------------|--------------|
| a) $5x \geq 30$ | b) $5x > 30$ |
| c) $5x \leq 30$ | d) $5x < 30$ |

4)



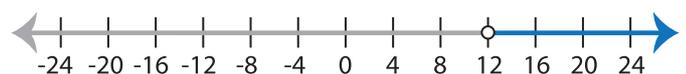
- |                   |                |
|-------------------|----------------|
| a) $x - 5 \geq 5$ | b) $x - 5 < 5$ |
| c) $x - 5 \leq 5$ | d) $x - 5 > 5$ |

5)



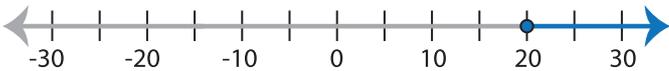
- |                   |                   |
|-------------------|-------------------|
| a) $3 + x > 1$    | b) $3 + x < 1$    |
| c) $3 + x \geq 1$ | d) $3 + x \leq 1$ |

6)



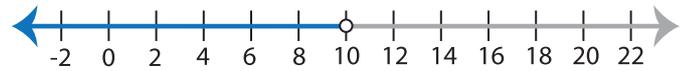
- |                 |                 |
|-----------------|-----------------|
| a) $2x > 24$    | b) $2x < 24$    |
| c) $2x \geq 24$ | d) $2x \leq 24$ |

7)



- |                      |                         |
|----------------------|-------------------------|
| a) $\frac{x}{5} < 4$ | b) $\frac{x}{5} \geq 4$ |
| c) $\frac{x}{5} > 4$ | d) $\frac{x}{5} \leq 4$ |

8)



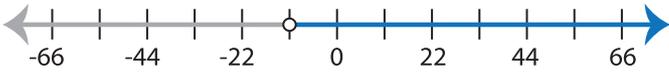
- |                   |                |
|-------------------|----------------|
| a) $x - 2 \leq 8$ | b) $x - 2 > 8$ |
| c) $x - 2 \geq 8$ | d) $x - 2 < 8$ |

# Identifying Inequalities

M

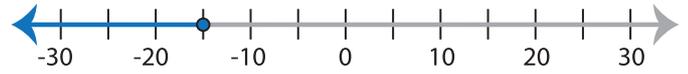
Choose the correct inequality that best describes each graph.

1)



- a)  $x + 2 \geq -9$                       b)  $x + 2 \leq -9$   
 c)  $-9 < x + 2$                         d)  $-9 > x + 2$

2)



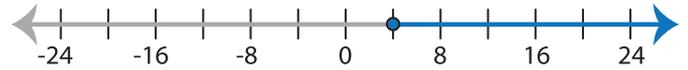
- a)  $\frac{x}{3} < -5$                               b)  $-5 \geq \frac{x}{3}$   
 c)  $\frac{x}{3} > -5$                               d)  $-5 \leq \frac{x}{3}$

3)



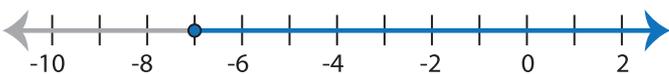
- a)  $7x < 35$                                 b)  $7x \geq 35$   
 c)  $35 \geq 7x$                                 d)  $35 < 7x$

4)



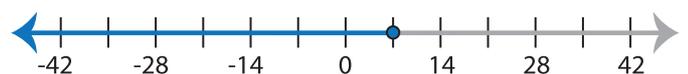
- a)  $-6 \leq x - 10$                             b)  $x - 10 < -6$   
 c)  $x - 10 > -6$                             d)  $-6 \geq x - 10$

5)



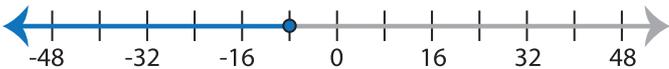
- a)  $4 < 11 + x$                               b)  $11 + x \geq 4$   
 c)  $11 + x \leq 4$                               d)  $4 > 11 + x$

6)



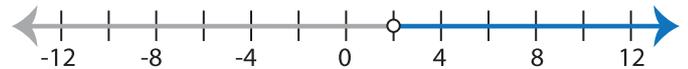
- a)  $2x < 14$                                  b)  $14 \leq 2x$   
 c)  $14 \geq 2x$                                  d)  $2x > 14$

7)



- a)  $\frac{x}{8} \geq -1$                                 b)  $-1 < \frac{x}{8}$   
 c)  $-1 > \frac{x}{8}$                                 d)  $\frac{x}{8} \leq -1$

8)



- a)  $-7 < x - 9$                               b)  $x - 7 \leq -9$   
 c)  $x - 7 \geq -9$                               d)  $-7 > x - 9$