

Warm-Up



Solve each of the following:

A. $3(4v + 6) - 2 = v - 17$

$$12v + 18 - 2 = v - 17$$

$$12v + 16 = v - 17$$

$$12v - v + 16 = \boxed{v - v} - 17$$

$$11v + 16 = -17$$

$$11v + 16 - 16 = -17 - 16$$

$$\frac{11v}{11} = \frac{-33}{11}$$

$$v = -3$$

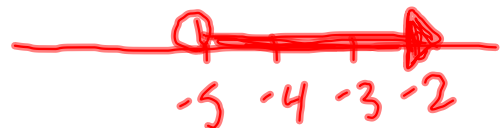
March 22, 2011

Solve
Graph
Verify

B. $b - 3 > -8$

$$b - 3 + 3 > -8 + 3$$

$$b > -5$$



LS	RS
$b - 3$	> -8
$0 - 3$	> -8
-3	> -8

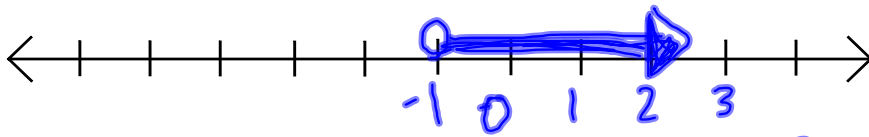
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- a) $a + 4 > 3$
- c) $r - 4 \geq -3$
- e) $s + \frac{3}{10} \leq -3$

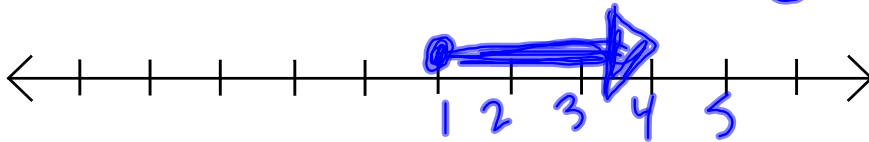
$$\begin{aligned}
 a + 4 &> 3 \\
 a + 4 - 4 &> 3 - 4 \\
 a &> -1
 \end{aligned}$$



(A)

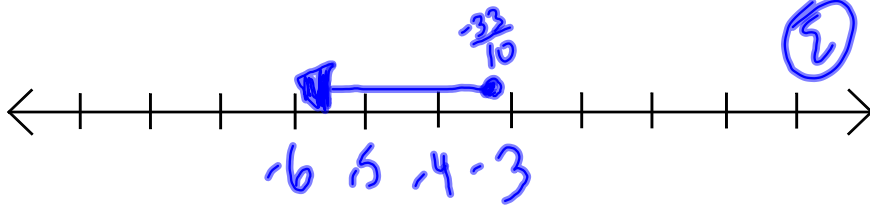


(C)



$$\begin{aligned}
 r - 4 &\geq -3 \\
 r - 4 + 4 &\geq -3 + 4 \\
 r &\geq 1
 \end{aligned}$$

(E)



$$\begin{aligned}
 (10) \quad s + \frac{3}{10} &\leq -3 \\
 10s + \frac{30}{10} &\leq -30
 \end{aligned}$$

LS	RS
$s + \frac{3}{10}$	≤ -3
$s + 0.3$	
$-3.3 + 0.3$	-3
-3	≤ -3

$$\begin{aligned}
 10s + 3 &\leq -30 \\
 10s + 3 - 3 &\leq -30 - 3 \\
 10s &\leq -33 \\
 \frac{10s}{10} &\leq \frac{-33}{10}
 \end{aligned}$$

$[-3.3]$

$$s \leq \left(\frac{-33}{10} \right)$$

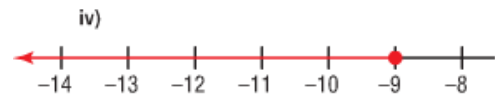
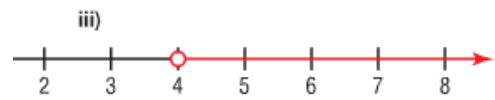
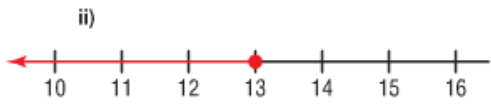
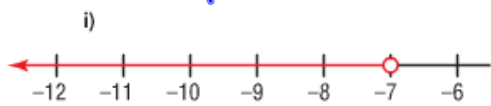
7. Match each inequality with the graph of its solution below. Is 3 a possible solution of each inequality? How can you find out?

a) $c - 2 > 2$

b) $8 \geq -5 + w$

c) $1 > r + 8$

d) $7 + m \leq -2$



a) $4t - 19 < 24 + 3t$

$$4t - 19 - 3t < 24 + 3t - 3t$$

$$t - 19 < 24$$

$$t - 19 + 19 < 24 + 19$$

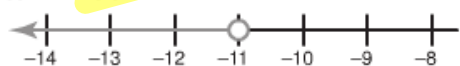
$$t < 43$$



b) $3x < 2x - 11$

$$3x - 2x < 2x - 11 - 2x$$

$$x < -11$$



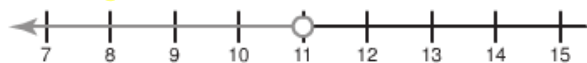
c) $5x - 7 < 4x + 4$

$$5x - 7 - 4x < 4x + 4 - 4x$$

$$x - 7 < 4$$

$$x - 7 + 7 < 4 + 7$$

$$x < 11$$



d) $2 + 3a \leq 2a - 5$

$$2 + 3a - 2a \leq 2a - 5 - 2a$$

$$2 + a \leq -5$$

$$2 + a - 2 \leq -5 - 2$$

$$a \leq -7$$



e) $1.7p + 2.8 \geq 0.7p - 7.6$

$$1.7p + 2.8 - 0.7p \geq 0.7p - 7.6 - 0.7p$$

$$p + 2.8 \geq -7.6$$

$$p + 2.8 - 2.8 \geq -7.6 - 2.8$$

$$p \geq -10.4$$



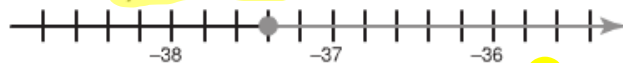
f) $2y + 13.3 \geq y - 24.1$

$$2y + 13.3 - y \geq y - 24.1 - y$$

$$y + 13.3 \geq -24.1$$

$$y + 13.3 - 13.3 \geq -24.1 - 13.3$$

$$y \geq -37.4$$





12. Joel currently has a balance of \$212.35 in his bank account. He must maintain a minimum balance of \$750 in the account to avoid paying a monthly fee. How much money can Joel deposit into his account to avoid paying this fee?

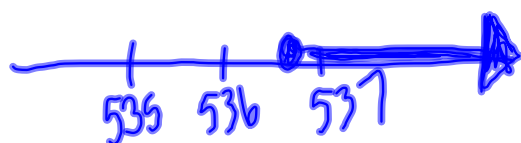
- Choose a variable, then write an inequality that can be used to solve this problem.
- Solve the problem.
- Graph the solution.

Let "m" represent money

$$212.35 + m \geq 750$$

$$212.35 - 212.35 + m \geq 750 - 212.35$$

$$m \geq 536.65$$



Section 6.5



Solving Linear Inequalities by Using Multiplication and Division

Multiply each side by 2

$$\begin{array}{l} (-2) \quad (-2) \\ -4 < 2 \\ -8 < 4 \quad \text{TRUE} \end{array}$$

Divide each side by 2

$$\begin{array}{l} -4 < 2 \\ \frac{-4}{2} < \frac{2}{2} \quad \text{TRUE} \\ -2 < 1 \end{array}$$

Multiply each side by -2

$$\begin{array}{l} (-2) \quad (-2) \\ -4 < 2 \\ 8 < -4 \quad \text{FALSE} \\ 8 > -4 \end{array}$$

Reverse the sign to make it true

Divide each side by -2

$$\begin{array}{l} -4 < 2 \\ \frac{-4}{-2} < \frac{2}{-2} \quad \text{False} \\ 2 < -1 \\ 2 > -1 \end{array}$$

* When multiplying or dividing by a negative number in the last step of solving an inequality you must reverse the sign to make the inequality true

The examples above illustrate these properties of inequalities:

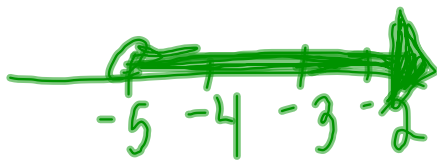
- ▶ When each side of an inequality is multiplied or divided by the same positive number, the resulting inequality is still true.
- ▶ When each side of an inequality is multiplied or divided by the same negative number, the inequality sign must be reversed for the inequality to remain true.



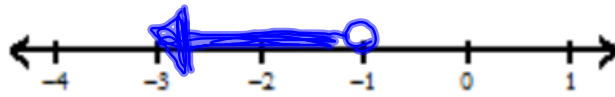
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A. $-5s < 25$
 $\overline{-5} \quad \overline{-5}$
 $s > -5$

B. $7a \leq -21$
 $\overline{7} \quad \overline{7}$
 $a \leq -3$



$$3) -4n - 2n > 6$$



$$\begin{aligned} -4n - 2n &> 6 \\ -6n &> 6 \\ \frac{-6n}{-6} &> \frac{6}{-6} \\ n &< -1 \end{aligned}$$



$$-2(3 - 1.5n) < 4(2 - n)$$

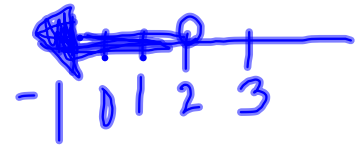
$$-6 + 3n < 8 - 4n$$

$$-6 + 3n + 4n < 8 \boxed{-4n + 4n}$$

$$-6 + 7n < 8$$

$$-6 + 6 + 7n < 8 + 6$$

$$\frac{7n}{7} < \frac{14}{7}$$
$$n < 2$$

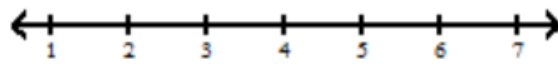




$$-2.6a + 14.6 > -5.2 + 1.8a$$



$$9 \geq 2b + 5 - 4$$





$$-6(2+6a) > 12+2a$$

$$-12-36a > 12+2a$$

$$-12-36a-2a > 12+\boxed{2a-2a}$$

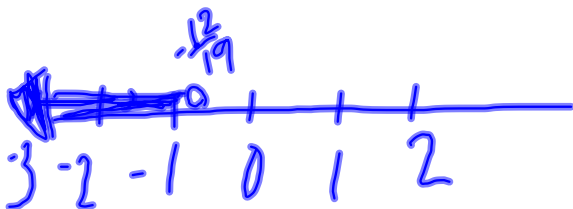
$$-12-38a > 12$$

$$\boxed{-12+12}-38a > 12+12$$

$$\frac{-38a}{-38} > \frac{24}{-38}$$

$$a < \frac{-24}{38}$$

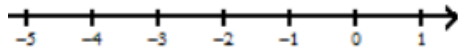
$$a < -0.63$$



$$a < \frac{-12}{19}$$



$$n - \frac{6}{5} - 1 > -\frac{21}{5}$$



$$\overset{(5)}{n} - \overset{(5)}{\frac{6}{5}} - \overset{(5)}{1} > \overset{(5)}{-\frac{21}{5}}$$

$$5n - \frac{30}{5} - 5 > \frac{-105}{5}$$

$$5n - 6 - 5 > -21$$

$$5n - 11 > -21$$

$$5n - 11 + 11 > -21 + 11$$

$$\frac{5n}{5} > \frac{-10}{5}$$

$$n > -2$$



$$-n + 4 \leq 6$$

$$-n + 4 - 4 \leq 6 - 4$$

$$\frac{-n}{-1} \leq \frac{2}{-1}$$

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Homework

Worksheet
questions only

2, 3, 5, 8, 10, 12,
14, 18, 20, 22, 24

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