

Solving One-Variable Linear Inequalities

1 Solve the following inequality.

$$x + 11 > 24$$

x _____

2 Solve the following inequality.

$$x - 5 < 2$$

x _____

3 $7x - 5 < 16$, then x _____ .

A. > 1

B. < -3

C. > -3

D. < 3

4 $-5x + 18 \geq 3$, then x _____ .

A. ≤ -10

B. ≥ -10

C. ≥ 3

D. ≤ 3

- 5 Solve the inequality and graph the solution on the number line.

$$x - 1 \geq -2$$

x _____



- 6 Solve the inequality and graph the solution on the number line.

$$-3x > 6$$

x _____



7

Solve the following inequality.

$$-13x + 38 > -27$$

 x _____

8

Solve the following inequality.

$$2(3x + 2) + 1 \geq -13$$

 x _____

9 Of the numbers 2, 3, 4, and 5, which of the following satisfies the inequality $3x - 1 < 11$?

A. only 2

B. 2, 3, and 4

C. only 5

D. 2 and 3

10 The smallest real number x which satisfies the inequality $-2004x - 2004 \leq 0$ is _____.

(Adapted from 2004 Math Kangaroo Problems, Level 11-12, Question #2)

A. -1

B. 2004

C. 0

D. 2

E. 1

Solving One-Variable Linear Inequalities

1 Solve the following inequality.

$$x + 11 > 24$$

$$x \underline{\hspace{1cm}}$$

Answer > 13

Solution $x + 11 > 24$
 $x > 24 - 11$
 $x > 13$

2 Solve the following inequality.

$$x - 5 < 2$$

$$x \underline{\hspace{1cm}}$$

Answer < 7

Solution $x - 5 < 2$
 $x < 2 + 5$
 $x < 7$

3 $7x - 5 < 16$, then $x \underline{\hspace{1cm}}$.

A. > 1

B. < -3

C. > -3

D. < 3

Answer D

Solution $7x - 5 < 16$
 $7x < 16 + 5$
 $7x < 21$
 $x < 3$

The answer is D.



4 $-5x + 18 \geq 3$, then x _____ .

A. ≤ -10

B. ≥ -10

C. ≥ 3

D. ≤ 3

Answer D

Solution $-5x + 18 \geq 3$
 $-5x \geq 3 - 18$
 $-5x \geq -15$
 $x \leq 3$

The answer is D.

5 Solve the inequality and graph the solution on the number line.

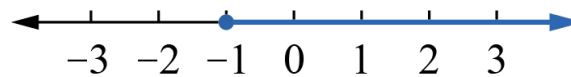
$$x - 1 \geq -2$$

x _____



Answer $x \geq -1$

Solution $x - 1 \geq -2$
 $x - 1 + 1 \geq -2 + 1$
 $x \geq -1$



6 Solve the inequality and graph the solution on the number line.

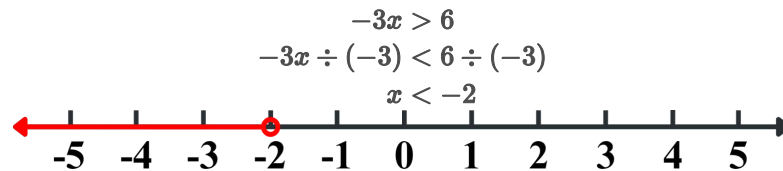
$$-3x > 6$$

x _____



Answer $x < -2$

Solution



7 Solve the following inequality.

$$-13x + 38 > -27$$

x _____

Answer < 5

Solution

$$\begin{aligned} -13x + 38 &> -27 \\ -13x &> -27 - 38 \\ -13x &> -65 \\ x &< 5 \end{aligned}$$

8 Solve the following inequality.

$$2(3x + 2) + 1 \geq -13$$

x _____

Answer ≥ -3

Solution

$$\begin{aligned} 2(3x + 2) + 1 &\geq -13 \\ 6x + 5 &\geq -13 \\ 6x &\geq -18 \\ x &\geq -3 \end{aligned}$$

9 Of the numbers 2, 3, 4, and 5, which of the following satisfies the inequality $3x - 1 < 11$?

A. only 2

B. 2, 3, and 4

C. only 5

D. 2 and 3

Answer D

Solution

$$\begin{aligned}3x - 1 &< 11 \\3x &< 11 + 1 \\3x &< 12 \\x &< 4\end{aligned}$$

Among four numbers, only 2 and 3 are smaller than 4.

The answer is D.

10 The smallest real number x which satisfies the inequality $-2004x - 2004 \leq 0$ is _____.

(Adapted from 2004 Math Kangaroo Problems, Level 11-12, Question #2)

A. -1 B. 2004 C. 0 D. 2 E. 1

Answer A

Solution

$$\begin{aligned}-2004x - 2004 &\leq 0 \\-2004x &\leq 2004 \\x &\geq -1\end{aligned}$$

So, the smallest value for x is -1 .

The answer is A.