

Lesson 20 Practice Problems

1. Solve $2x < 10$. Explain how to find the solution set.

2. Lin is solving the inequality $15 - x < 14$. She knows the solution to the equation $15 - x = 14$ is $x = 1$

How can Lin determine whether $x > 1$ or $x < 1$ is the solution to the inequality?

3. A cell phone company offers two texting plans. People who use plan A pay 10 cents for each text sent or received. People who use plan B pay 12 dollars per month, and then pay an additional 2 cents for each text sent or received.

a. Write an inequality to represent the fact that it is cheaper for someone to use plan A than plan B. Use x to represent the number of texts they send.

b. Solve the inequality.

4. Clare made an error when solving $-4x + 3 < 23$.

Describe the error that she made.

$$-4x + 3 < 23$$

$$-4x < 20$$

$$x < -5$$

5. Diego's goal is to walk more than 70,000 steps this week. The mean number of steps that Diego walked during the first 4 days of this week is 8,019.

a. Write an inequality that expresses the mean number of steps that Diego needs to walk during the last 3 days of this week to walk more than 70,000 steps. Remember to define any variables that you use.

b. If the mean number of steps Diego walks during the last 3 days of the week is 12,642, will Diego reach his goal of walking more than 70,000 steps this week?

6. Here are statistics for the length of some frog jumps in inches:

- the mean is 41 inches
- the median is 39 inches
- the standard deviation is about 9.6 inches
- the IQR is 5.5 inches

How does each statistic change if the length of the jumps are measured in feet instead of inches?

(From Unit 1, Lesson 15.)

7. Solve this system of linear equations without graphing: $\begin{cases} 3y + 7 = 5x \\ 7x - 3y = 1 \end{cases}$

(From Unit 2, Lesson 15.)

8. Solve each system of equations without graphing.

$$\text{a. } \begin{cases} 5x + 14y = -5 \\ -3x + 10y = 72 \end{cases}$$

$$\text{b. } \begin{cases} 20x - 5y = 289 \\ 22x + 9y = 257 \end{cases}$$

(From Unit 2, Lesson 16.)

9. Noah and Lin are solving this system: $\begin{cases} 8x + 15y = 58 \\ 12x - 9y = 150 \end{cases}$

Noah multiplies the first equation by 12 and the second equation by 8, which gives:

$$\begin{cases} 96x + 180y = 696 \\ 96x - 72y = 1,200 \end{cases}$$

Lin says, "I know you can eliminate x by doing that and then subtracting the second equation from the first, but I can use smaller numbers. Instead of what you did, try multiplying the first equation by 6 and the second equation by 4."

a. Do you agree with Lin that her approach also works? Explain your reasoning.

b. What are the smallest whole-number factors by which you can multiply the equations in order to eliminate x ?

(From Unit 2, Lesson 16.)

10. What is the solution set of the inequality $\frac{x+2}{2} \geq -7 - \frac{x}{2}$?

A. $x \leq -8$

B. $x \geq -8$

C. $x \geq -\frac{9}{2}$

D. $x \geq 8$

(From Unit 2, Lesson 19.)