

Lesson 18 Practice Problems

1. Tyler goes to the store. His budget is \$125. Which inequality represents x , the amount in dollars Tyler can spend at the store?

A. $x \leq 125$

B. $x \geq 125$

C. $x > 125$

D. $x < 125$

2. Jada is making lemonade for a get-together with her friends. She expects a total of 5 to 8 people to be there (including herself). She plans to prepare 2 cups of lemonade for each person.

The lemonade recipe calls for 4 scoops of lemonade powder for each quart of water. Each quart is equivalent to 4 cups.

Let n represent the number of people at the get-together, c the number of cups of water, ℓ the number of scoops of lemonade powder.

Select **all** the mathematical statements that represent the quantities and constraints in the situation.

A. $5 < n < 8$

B. $5 \leq n \leq 8$

C. $c = 2n$

D. $\ell = c$

E. $10 < c < 16$

F. $10 \leq \ell \leq 16$

3. A doctor sees between 7 and 12 patients each day. On Mondays and Tuesdays, the appointment times are 15 minutes. On Wednesdays and Thursdays, they are 30 minutes. On Fridays, they are one hour long. The doctor works for no more than 8 hours a day.

Here are some inequalities that represent this situation.

$$0.25 \leq y \leq 1$$

$$7 \leq x \leq 12$$

$$xy \leq 8$$

a. What does each variable represent?

b. What does the expression xy in the last inequality mean in this situation?

4. Han wants to build a dog house. He makes a list of the materials needed:

- At least 60 square feet of plywood for the surfaces
- At least 36 feet of wood planks for the frame of the dog house
- Between 1 and 2 quarts of paint

Han's budget is \$65. Plywood costs \$0.70 per square foot, planks of wood cost \$0.10 per foot, and paint costs \$8 per quart.

Write inequalities to represent the material constraints and cost constraints in this situation. Be sure to specify what your variables represent.

5. The equation $V = \frac{1}{3}\pi r^2 h$ represents the volume of a cone, where r is the radius of the cone and h is the height of the cone.

Which equation is solved for the height of the cone?

A. $h = V - \pi r^2$

B. $h = \frac{1}{3}\pi r^2 V$

C. $3V - \pi r^2 = h$

D. $h = \frac{3V}{\pi r^2}$

(From Unit 2, Lesson 9.)

6. Solve each system of equations without graphing.

a.
$$\begin{cases} 2x + 3y = 5 \\ 2x + 4y = 9 \end{cases}$$

b.
$$\begin{cases} \frac{2}{3}x + y = \frac{7}{3} \\ \frac{2}{3}x - y = 1 \end{cases}$$

(From Unit 2, Lesson 14.)

7. There is a pair of x and y values that make each equation true in this system of equations:
- $$\begin{cases} 5x + 3y = 8 \\ 4x + 7y = 34 \end{cases}$$

Explain why the same pair of values also makes $9x + 10y = 42$ true.

(From Unit 2, Lesson 15.)

8. Which ordered pair is a solution to this system of equations?
- $$\begin{cases} 7x + 5y = 59 \\ 3x - 9y = 159 \end{cases}$$

- A. (-17, -12)
- B. (-17, 12)
- C. (17, -12)
- D. (17, 12)

(From Unit 2, Lesson 16.)

9. Which equation has exactly one solution in common with the equation $y = 6x - 2$?

- A. $18x - 3y = 6$
- B. $\frac{1}{2}y = 3x - 2$
- C. $2y = 4x - 12$
- D. $18x - 12 = 3y$

(From Unit 2, Lesson 17.)

10. How many solutions does this system of equations have? Explain how you know.

$$\begin{cases} y = -4x + 3 \\ 2x + 8y = 10 \end{cases}$$

(From Unit 2, Lesson 17.)