

Key

## Knowledge and Understanding

1. Explain the difference between the solutions to an equation and an inequality.

Equation: 1 Solution

Inequality: infinite solutions

2. Describe the difference between an expression and an equation.

Expression: #s, variables &amp; operations; can be simplified

Equation: 2 equal expressions; can be solved

3. What would be the steps that you would take to simplify the following expression:  $2(x-3)+5$

① distribute the 2 to x and -3  $2x-6+5$ ② combine like terms  $2x-1$ 

## Proficiency of Skills

4. Simplify:  $5(2a-2b)+5(3a+2b)$

$$25a$$

4. Simplify:  $8-(x-5)-3x$

$$-4x+13$$

5. Solve:  $-1+3x=56$

$$x=19$$

6. Solve:  $8x-5=-29$

$$x=-3$$

7. Solve:  $2x+13 \geq -27$

$$x \geq -20$$

8. Solve:  $-7x-5 < 16$

$$x > -3$$

## Application

9. To get a learner's permit, one must be at least 16 years old. Write an inequality to represent  $y$ , the required age to get a permit.

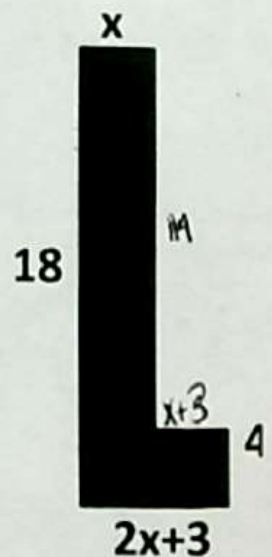
$$y \geq 16$$

10. Write a simplified expression that represents the PERIMETER of the figure.

$$4x+42$$

11. Write a simplified expression that represents the AREA of the above figure.

$$22x+12$$



Write the following statement as an algebraic equation:

12. "Three more than the product of a number and six is equal to two less than the number."

$$6x + 3 = x - 2$$

13. Twelve less than three times a number is 9. What is that number?

$$3x - 12 = 9 \quad x = 7$$

14. Charles owns a boat rental company. He uses the equation  $c = 4.50h + 10$  to determine the cost of boat rental where  $c = \text{cost}$  and  $h = \text{hours of rental}$ . If a customer is charged \$37.00, how long was the boat rented for?

6 hours

$$37 = 4.50h + 10$$

$$\begin{array}{r} -10 \\ \hline 27 = 4.50h \\ \frac{27}{4.50} = \frac{4.50h}{4.50} \\ h = 6 \text{ hours} \end{array}$$

15. Chuck and Sam run each day for exercise. Sam runs twice as far as Chuck each day. If together they run 7 miles, how many miles does Sam run each day?

$$\begin{aligned} \text{Sam} &= 2c \\ \text{Chuck} &= c \end{aligned}$$

$$2c + c = 7$$

4 2/3 miles

16. James has spent \$32 of his \$50 Target gift card. He plans on using the remaining balance to buy gum. If the gum costs \$2.50 a pack, how much gum can he purchase?

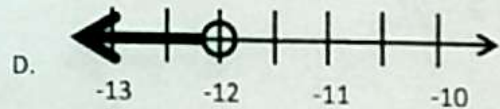
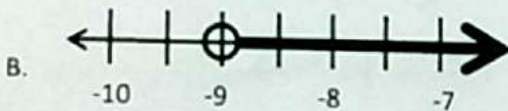
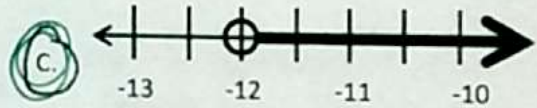
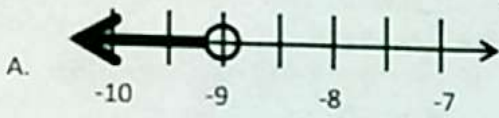
$$x = 7.2$$

7 packs of gum

$$2.50x + 32 = 50$$

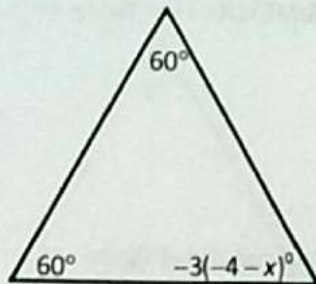
$$\begin{array}{r} -32 \\ \hline 2.50x = 18 \\ \frac{2.50x}{2.50} = \frac{18}{2.50} \\ x = 7.2 \end{array}$$

17. Which of the following shows the solution to  $3 + \frac{x}{3} > -1$ ?



18. Find the value of  $x$  in the diagram below.

The sum of the angles in a triangle = 180 degrees



$$-3(-4-x) = 60$$

$$12 + 3x = 60$$

$$\begin{array}{r} -12 \\ \hline 3x = 48 \\ \frac{3x}{3} = \frac{48}{3} \\ x = 16 \end{array}$$

~~x = 16~~

A.  $15\frac{2}{3}$

B. 18

C. 60

D. Not here

19. Sue makes \$10 an hour babysitting. She needs at least \$280 to pay her bills. She has \$120 already saved. Which inequality best describes the number of hours,  $h$ , that she would need to babysit in order to pay her bills?

A.  $120 + 10h \geq 280$

B.  $120 + 10h \leq 280$

C.  $120 + 10 + h \leq 280$

D.  $10h \geq 280$