

EXPRESSIONS AND EQUATIONS

STUDY GUIDE!

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. A triangle has sides with lengths of $5x - 2$, $3x - 6$, and $5x + 1$. What is the perimeter of the triangle?
- $13x - 7$
 - $3x - 7$
 - $7x + 5$
 - $6x$
- _____ 2. Simplify the expression $(5 \div 5) + 5 \times (5^2 - 5)$.
- 145
 - 120
 - 101
 - 26
- _____ 3. Simplify the expression $2 \times 6^2 - 26 \div 2$.
- 59
 - 10
 - 46
 - 131
- _____ 4. Simplify the expression $222 - 3(5^2 - 4^2) + 12$.
- 153
 - 118
 - 207
 - 5,471
- _____ 5. Combine the like terms in the expression $16y - 7y$.
- $11 + y$
 - $9y^2$
 - $23y$
 - $9y$
- _____ 6. Combine like terms in the expression $2a - 3b + 5b - a$.
- $3ab$
 - $3a + 2b$
 - $7a - 4b$
 - $a + 2b$
- _____ 7. An item costs n dollars. If the price of the item increases by 20%, the new price can be represented by the expression $n + 0.2n$. Which expression can also represent the new price?
- $1.2n$
 - $0.2n$
 - $n + 1.2$
 - $20n$
- _____ 8. For a sale, a store decreases its prices on all items by 15%. An item that cost \$120 before the sale now costs $\$120 - 0.15(\$120)$. What is another expression for the sale price?
- $0.85(\$120)$
 - $\$120 - 85$
 - $\$120 - 15$
 - $0.15(\$120)$
- _____ 9. Solve the equation $a - 28 = 19$.
- $a = -9$
 - $a = 9$
 - $a = 37$
 - $a = 47$

- _____ 18. Keith is given the following math problem to solve.

Enya has \$160 in her bank account. During March, she earns \$7.50 per hour baby-sitting. After depositing her earnings in the account, she has \$340. How many hours did Enya baby-sit in March?

Keith used the numeric method below to solve the problem. Which algebraic solution matches his numeric method?

- 1) Subtract 160 from 340 to find the amount Enya earned during March.
2) Divide the result by 7.5 to find the number of hours Enya spent baby-sitting.

$$\begin{array}{r} \text{a. } 160 + 7.5h = 340 \\ -160 \quad \quad = -160 \\ \hline 7.5h = 180 \\ h = \frac{180}{7.5} \end{array}$$

$$\begin{array}{r} \text{c. } h + (7.5)160 = 340 \\ \quad \quad \quad -160 = -160 \\ \hline h + 7.5 = 180 \\ h = \frac{180}{7.5} \end{array}$$

$$\begin{array}{r} \text{b. } 7.5h - 160 = 340 \\ +160 = +160 \\ \hline 7.5h = 500 \\ h = \frac{500}{7.5} \end{array}$$

$$\begin{array}{r} \text{d. } 160h + 7.5 = 340 \\ -160 \quad \quad = -160 \\ \hline h + 7.5 = 180 \\ h = \frac{180}{7.5} \end{array}$$

- _____ 19. The length of a rectangle is 99 centimeters. Find all possible values for the width of the rectangle if the perimeter is at least 264 centimeters.

a. $w \geq 165$ cm b. $w \geq 33$ cm c. $w \leq 33$ cm d. $w \leq 165$ cm

Short Answer

1. Simplify the expression.

$$4 - 3(2 + 5v) + 7$$

2. A shirt costs \$16.74.

Part A: How much change should you receive if you give the cashier \$20.99? Show your work.

Part B: How much change should you receive if the shirt is on sale for only \$14.46 and you give the cashier \$20.99? Show your work.

3. The daytime thermometer reading of 72°F is 13°F lower than the daytime temperature required for the opening of Samantha's neighborhood outdoor pool. Does the pool open when the temperature is 59°F or 85°F? Use substitution of both numbers in an equation to prove the answer.

Name: _____

ID: A

4. By dividing the number of houses in Antonio's subdivision by 4 and adding 15, you can find the number of houses in Hector's subdivision. If Hector has 47 houses in his subdivision, how many houses are in Antonio's subdivision?
5. If you triple the number of times Elizabeth has cooked dinner for her family and then add 4, you get the number of times her sister Joy has cooked the family's dinner. If Joy has cooked the family's dinner 25 times, how many times has Elizabeth cooked dinner?

Essay

1. An electrician charges \$170 for a service call and \$60 for each hour of work after the first hour.

Let h represent the hours the electrician works on a service call that exceeds 1 hour. Danae wrote the expression $170 + (h - 1)(60)$ to represent the cost of hiring this electrician. Juana wrote the expression $110 + 60h$ to represent the cost.

Part A: Are these expressions equivalent? Justify your answer.

Part B: Explain some of the strengths and weaknesses of each expression. Which one seems like a clearer representation of the electrician's billing charge? Which would you rather use to calculate the charge for a job?