

LESSON
6-1

Algebraic Expressions

Algebraic expressions can be written from verbal descriptions. Likewise, verbal descriptions can be written from algebraic expressions. In both cases, it is important to look for word and number clues.

Algebra from words

“One third of the participants increased by 25.”

Clues

Look for “number words,” like

- “One third.”
- “Of” means multiplied by.
- “Increased by” means add to.

Combine the clues to produce the expression.

- “One third of the participants.” $\frac{1}{3}p$ or $\frac{p}{3}$.
- “Increased by 25.” +25

“One third of the participants increased by 25.”

$$\frac{1}{3}p + 25 \text{ or } \frac{p}{3} + 25$$

Words from algebra

“Write $0.75n - \frac{1}{2}m$ with words.”

Clues

Identify the number of parts of the problem.

- “0.75n” means “three fourths of n” or 75 hundredths of n. The exact meaning will depend on the problem.
- “-” means “minus,” “decreased by,” “less than,” etc., depending on the context.

- “ $\frac{1}{2}m$ ” is “one half of m” or “m over 2.”

Combine the clues to produce a description.

“75 hundredths of the population minus half the men.”

Write a verbal description for each algebraic expression.

1. $100 - 5n$

2. $0.25r + 0.6s$

3. $\frac{3m - 8n}{13}$

Write an algebraic expression for each verbal description.

4. Half of the seventh graders and one third of the eighth graders were divided into ten teams.

5. Thirty percent of the green house flowers are added to 25 ferns for the school garden.

6. Four less than three times the number of egg orders and six more than two times the number of waffle orders.

UNIT 3: Expressions, Equations, and Inequalities

MODULE 6 Expressions and Equations

LESSON 6-1

Practice and Problem Solving: A/B

- $p + 4$
- $3L - 5$
- Answers will vary. Sample answer: \$25 minus six-tenths of x
- Answers will vary. Sample answer: four more than two thirds of y .
- $2,000 + 80z$
- $2.625a - 4.5b$
- $5(9c + 2d)$
- $3(9 - 3x + 5y)$
- $20 - 3j$
- $5 + 18y$

Practice and Problem Solving: C

- $4a + 5b$
- $4a + 5b = 120$
- 20
 - 20
 - \$100
 - 10
 - \$40
 - \$80
 - \$60
 - 12
 - \$60
 - 20
 - \$80
 - 8
 - \$40
- The total price of the high-energy lamp is a whole-number multiple of 4. The total price of the low-energy lamp is a whole-number multiple of 5.
- 20 high-energy lamps at \$5 = \$100;
 $\$120 - \$100 = 20$; $\$20 \div 4 = 5$;
5 low-energy lamps can be bought

Practice and Problem Solving: D

- $50 -$; 2; 2; 2; 2; $50 -$; $0.2m$;
 $50 - 0.20m$
- $10 -$; 3; 3; 3; $10 - 0.3n$
- $\frac{1}{4}$; $6x$; $\frac{1}{4}$; $14y$; $\frac{6}{4}x$; $\frac{14}{4}y$; $\frac{3}{2}x$; $\frac{7}{2}y$
- $\frac{1}{6}$; $15a$; $\frac{1}{6}$; $20b$; $\frac{15}{6}a$; $\frac{20}{6}b$; $\frac{5}{2}a$; $\frac{10}{3}b$
- 5; 5; 2; 3; 5; 5; 6
- 7; 7; 2; 3; 7; 7; 6
- $4(x + 3)$
- $3(2s + 6t + w)$

Reteach

- Answers will vary. Sample answer: one hundred minus five times the number of cars.
- Answers will vary. Sample answer: twenty-five hundredths of the apartments and six tenths of the condos.
- Answers will vary. Sample answer: one thirteenth of the difference between three times the number of hammers and eight times the number of pliers.
- $\frac{1}{10} \left(\frac{1}{2}s + \frac{1}{3}e \right)$
- $0.3f + 25$
- $(3e - 4) + (6 + 2w)$

Reading Strategies

Problem 1

- $0.35(50m + 75a)$
- $0.35(50m + 75a) = 17.5m + 26.25a$
- The original expression shows how much was contributed to the charity and to pay for the others costs of the event. The simplified expression might be easier to use to directly calculate the amount going to the charity.

Problem 2

- $20d + 12c$, where d is the drill price and c is the charger price