

Algebra I

Lesson 1.3 Write Expressions

Warm-Up

Evaluate each of the following.

(a) $2[54 \div (4^2 + 2)]$

$2[54 \div (16 + 2)]$

$2[54 \div 18]$

$2[3]$

6

(b) $24 - (3^2 + 1)$

$24 - (9 + 1)$

$24 - (10)$

14

(c) $\frac{5x}{x+2}$ when $x=3$

$\frac{5(3)}{(3)+2} = \frac{15}{5} = 3$

Example 1. Translate Verbal Phrases into Expressions

Addition: sum, plus, total, more than, increased by
Subtraction: difference, less than, minus, decreased by
Multiplication: times, product, multiplied by, of
Division: quotient, divided by, divided into

Verbal Phrase

(a) 12 decreased by a number x

(b) The sum of a number r and 7

(c) 8 times the quantity (4 plus a number n)

(d) The quotient of the square of a number w and 5

Expression

$12 - x$

$r + 7$

$8(4 + n)$

$\frac{w^2}{5}$ or $w^2 \div 5$

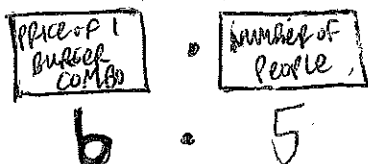
Example 2. Write an Expression

The length of a building is 20 feet more than its width. Write an expression for the length of the building in terms of its width, w .

$w + 20$

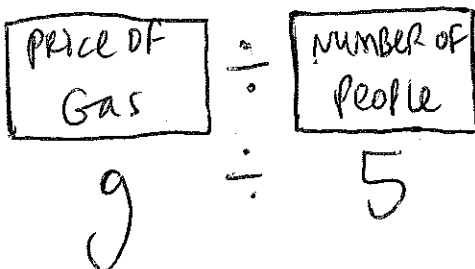
Example 3. Use a Verbal Model to Write an Expression

(a) You and 4 friends meet to have dinner at a restaurant. Everyone orders the same thing, the burger combo. Write an expression for the total cost of the entire meal.



$5b$

(b) Driving home the car needs to be filled with gas. Everyone agrees to chip in the same amount. Write an expression for how much each person should pay.



$\frac{g}{5}$

Rate - Fraction that compares two quantities measured in different units

Unit Rate - Rate with a denominator of 1

Example 4. Find a Unit Rate

(a) A 16 ounce box of cereal costs \$2.99. Find the unit rate to the nearest cent.

$$\frac{\$2.99}{16 \text{ oz.}} = \frac{\$0.19}{1 \text{ oz.}} = \boxed{\$0.19/\text{oz}}$$

(b) A marathon runner travels 26 miles in 5 hours. Find the unit rate to the nearest mile.

$$\frac{26 \text{ miles}}{5 \text{ hours}} = \frac{5.2 \text{ miles}}{1 \text{ hour}} = 5.2 \text{ miles/hour} \approx \boxed{5 \text{ MPH}}$$

Example 5. Application

Tickets ordered online for a basketball game are \$19.95 each. There is a \$3 service charge no matter how many tickets are ordered.

(a) Write an expression for the cost of ordering tickets.

$$\boxed{19.95t + 3}$$

(b) Based on your expression find the cost of ordering 5 tickets.

$$19.95(5) + 3 \\ \$102.75$$

$$\boxed{\text{It would cost } \$102.75 \\ \text{for 5 tickets}}$$

Assignment: Pages 18 – 19 (3 – 29)

Review:

Evaluate the expression for the given value of the variable.

1. $3y^2$ when $y = 5$

2. $(4x)^3$ when $x = 2$

3. $6x^4$ when $x = 4$

4. $a^4 - 5$ when $a = 3$

5. $(x + 2)^2$ when $x = 4$

6. $3a^2 + 8$ when $a = 5$

Write the expression in exponential form.

7. four squared

8. three cubed

9. $x \cdot x \cdot x \cdot x \cdot x$

10. $2x \cdot 2x \cdot 2x \cdot 2x \cdot 2x$

11. $x \cdot x \cdot x \cdot y \cdot y$