

Learning Objective: Students will be able to write and evaluate an expression written in words.

Warm Up

3. $\frac{5}{7} \times \frac{3}{5}$

7. $\frac{13}{8} \times \frac{4}{7}$

11. $\frac{23}{3} \times \frac{1}{8}$

4. $\frac{5}{4} \times \frac{3}{4}$

8. $\frac{3}{5} \times \frac{13}{8}$

12. $\frac{3}{4} \times \frac{1}{4}$

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Warm Up Answers

$$3. \frac{5}{7} \times \frac{3}{5} \\ = \frac{3}{7}$$

$$7. \frac{13}{8} \times \frac{4}{7} \\ = \frac{13}{14}$$

$$11. \frac{23}{3} \times \frac{1}{8} \\ = \frac{23}{24}$$

$$4. \frac{5}{4} \times \frac{3}{4} \\ = \frac{15}{16}$$

$$8. \frac{3}{5} \times \frac{13}{8} \\ = \frac{39}{40}$$

$$12. \frac{3}{4} \times \frac{1}{4} \\ = \frac{3}{16}$$

Lesson 3.1

November 5, 2015

Essential Question:

How can you write and evaluate an expression that represents a real-life problem?

Lesson Objective:

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write and evaluate an expression written in words.

Self-Evaluation Scale

Score	Description
4	I can teach other students how to write and evaluate an expression written in words.
3	I can write and evaluate an expression written in words.
2	I recognize, but still need help to write and evaluate an expression written in words.
1	I do not know how to write and evaluate an expression written in words.

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Activity 1 & 2

Follow along with Activities 1 & 2 on pages 57 & 58 of your Big Ideas Record and Practice Journal.

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$$\frac{12 \div 3}{3 \div 3} = \frac{4}{1}$$

- a. You babysit for 3 hours. You receive \$12. What is your hourly wage?
- Write the problem. Underline the important numbers and units you need to solve the problem.
 - Read the problem carefully a second time. Circle the key word for the question.

A red pencil is positioned above a yellow sticky note. The sticky note contains the text: "You babysit for 3 hours. You receive \$12. What is your hourly wage?" The words "3 hours", "\$12", and "hourly wage" are highlighted in yellow.

- Write each important number or word, with its units, on a piece of paper. Write +, -, ×, ÷, and = on five other pieces of paper.

A collection of yellow sticky notes is shown. One note in the foreground contains the text "hourly wage (\$ per hour)". There are several other blank sticky notes scattered around it.

- Arrange the pieces of paper to answer the key word question, "What is your hourly wage?"
- Evaluate the expression that represents the hourly wage.

$$\begin{aligned} \text{hourly wage} &= \square \div \square && \text{Write.} \\ &= \square && \text{Evaluate.} \end{aligned}$$

❖ So, your hourly wage is \$ \square per hour.

- b. How can you use your hourly wage to find how much you will receive for any number of hours worked?

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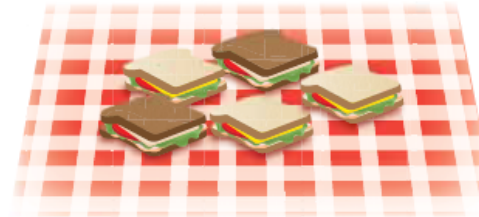
$$\frac{2}{6} - \frac{3}{6}$$

- a. You wash cars for 2 hours. You receive \$6. How much do you earn per hour?



- b. You have \$60. You buy a pair of jeans and a shirt. The pair of jeans costs \$27. You come home with \$15. How much did you spend on the shirt?

- c. For lunch, you buy 5 sandwiches that cost \$3 each. How much do you spend?



- d. You are running a 4500-foot race. How much farther do you have to go after running 2000 feet?

- e. A young rattlesnake grows at a rate of about 20 centimeters per year. How much does a young rattlesnake grow in 2 years?



$$60 = 27 + 15 + S$$

$$60 = 42 + S$$

$$18 = S$$

$$\textcircled{4} + \textcircled{3} + \overset{x}{1}$$

$$\cancel{18}$$

$$2 + 2 = \square$$

$$\begin{array}{r} 2 + 2 \\ 4 \end{array}$$

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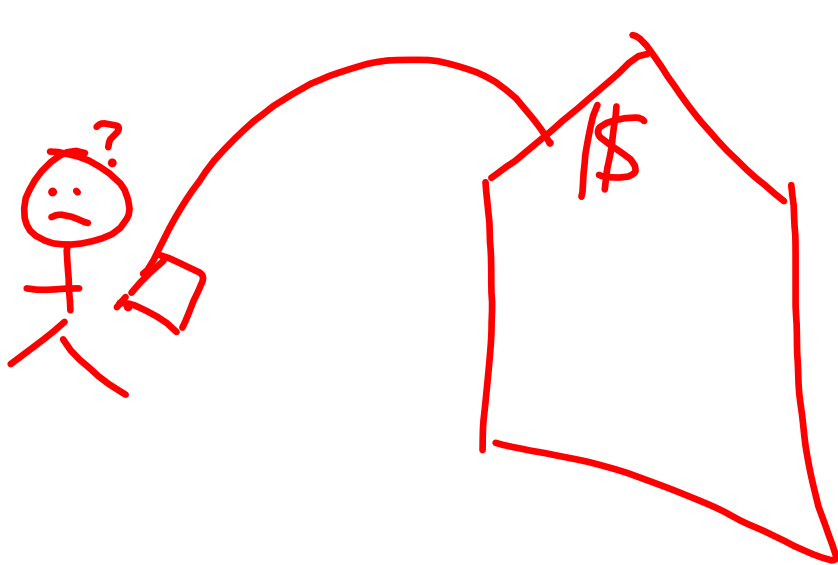
Algebraic Expression

Expression that contains numbers, operations, and one or more symbol.

Terms

Part of an algebraic expression

Separated by Plus
Signs



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, 9 0 Variable i

b Symbol that represents one or more numbers

2 x

.

$$\sqrt{-16}$$

$$\sqrt{16} = 4, -4$$

$$\sqrt{36} = 6, -6$$

Coefficient

The numerical factor of a term that contains a variable

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Constant

A term without a variable

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1

Identifying Parts of an Algebraic Expression

Identify the terms, coefficients, and constants in each expression.

a. $5x + 13$

$$\underbrace{5x} + \underbrace{13}$$

• **Terms:** $5x$, 13
Coefficient: 5
Constant: 13

b. $2z^2 + y + 3$

$$\underbrace{2z^2} + \underbrace{y} + \underbrace{3}$$

Terms: $2z^2$, $1y$, 3
Coefficients: 2 , 1
Constant: 3

$$\mathbb{Z}^2 \neq \mathbb{Z}$$

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~~IX~~ ~~X~~

2 Writing Algebraic Expressions Using Exponents

Write each expression using exponents.

a. $d \cdot d \cdot d \cdot d$

Because d is used as a factor 4 times, its exponent is 4.

∴ So, $d \cdot d \cdot d \cdot d = d^4 \neq d$

b. $1.5 \cdot h \cdot h \cdot h$

Because h is used as a factor 3 times, its exponent is 3.

∴ So, $1.5 \cdot h \cdot h \cdot h = 1.5h^3$

$$4 + 4 + 4 - 4$$

$$h + h + \cancel{h} - \cancel{h}$$

$$\cancel{3h} \quad 2h$$

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$$4n$$

$$2a$$

$$a = 10$$

3

Evaluating Algebraic Expressions

a. Evaluate $k + 10$ when $k = 25$.

$$\begin{aligned} k + 10 &= 25 + 10 \\ &= 35 \end{aligned}$$

Substitute 25 for k .

Add 25 and 10.

b. Evaluate $4 \cdot n$ when $n = 12$.

$$\begin{aligned} 4 \cdot n &= 4 \cdot 12 \\ &= 48 \end{aligned}$$

Substitute 12 for n .

Multiply 4 and 12.

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4

Evaluating an Expression with Two Variables

Evaluate $a \div b$ when $a = 16$ and $b = \frac{2}{3}$.

$$a \div b = 16 \div \frac{2}{3}$$

Substitute 16 for a and $\frac{2}{3}$ for b .

$$= 16 \cdot \frac{3}{2}$$

Multiply by the reciprocal of $\frac{2}{3}$, which is $\frac{3}{2}$.

$$= 24$$

Multiply.

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5 Evaluating Expressions with Two Operations

a. Evaluate $3x - 14$ when $x = 5$.

$$3x - 14 = 3(5) - 14$$

Substitute 5 for x .

$$= 15 - 14$$

Using order of operations, multiply 3 and 5.

$$= 1$$

Subtract 14 from 15.

b. Evaluate $z^2 + 8.5$ when $z = 2$.

$$z^2 + 8.5 = 2^2 + 8.5$$

Substitute 2 for z .

$$= 4 + 8.5$$

Using order of operations, evaluate 2^2 .

$$= 12.5$$

Add 4 and 8.5.

$$18 = 3x$$

$$x = 2$$

$$18 = 3 \cdot 2$$

$$6 \cdot 2$$

$$\textcircled{10}$$

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Assignment

Complete problems 8, 12, 16, 20, 26, 30, 34, 36, 44, 46, 50, & 52 on pages 115 - 117 in your Big Ideas Text Book.

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Homework

In your Big Ideas Record and Practice Journal

page ~~34~~.

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