

Algebra I

Lesson 1.1

Evaluate Expressions

Variable - LETTER USED TO REPRESENT ONE OR MORE NUMBERS

Algebraic Expression - CONSISTS OF NUMBERS, VARIABLES, AND OPERATIONS

Example 1. Evaluate Algebraic Expressions

Evaluate the expression when $c = 4$.

(a) $4c$

$4(4)$
 16

(b) $\frac{8}{c}$

$\frac{8}{(4)}$
 2

(c) $c+15$

$(4)+15$
 19

(d) $2-c$

$2-(4)$
 -2

Example 2. Evaluate an Expression

You are ordering a skateboard and a helmet online. Let s represent the weight of the skateboard and h represent the weight of the helmet. The total weight of the two items can be represented by the expression $s+h$.

- (a) Find the total weight of your order if the helmet weighs 1.3 kg and the skateboard weighs 5.4 kg.

$s+h$
 $5.4 \text{ kg} + 1.3 \text{ kg}$

The total weight of the order is 6.7 kg.

- (b) If a kilogram is approximately 2 pounds, what is the weight of the order in pounds?

$6.7(2)$

The order is approximately 13.4 LBS.

Power - AN EXPRESSION THAT REPRESENTS REPEATED MULTIPLICATION OF THE SAME FACTOR

Base - THE FACTOR THAT IS BEING REPEATEDLY MULTIPLIED IN A POWER

Exponent - THE NUMBER THAT REPRESENTS HOW MANY TIMES THE BASE IS USED AS A FACTOR IN A POWER

Example 3. Read and Write Powers

Write the power in words and as a product.

Power	Words	Product
(a) 6^2	SIX TO THE SECOND POWER SIX SQUARED	$6 \cdot 6$
(b) 3^4	THREE TO THE FOURTH POWER	$3 \cdot 3 \cdot 3 \cdot 3$
(c) $\left(\frac{1}{5}\right)^1$	ONE-FIFTH TO THE FIRST POWER	$\frac{1}{5}$
(d) p^3	P TO THE THIRD POWER	$p \cdot p \cdot p$

Example 4. Evaluate Powers

Evaluate the expression.

(a) n^5 when $n=3$

$$3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$
$$\underline{243}$$

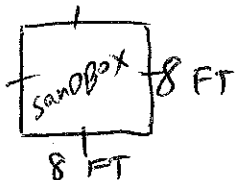
(b) d^2 when $d = \frac{9}{5}$

$$\left(\frac{9}{5}\right)^2 = \left(\frac{9}{5}\right)\left(\frac{9}{5}\right)$$
$$\underline{\frac{81}{25}}$$

Example 5. Evaluate a Power and Label a Diagram

A new sandbox is going to be built at the playground. Each side measures 8 feet.

(a) Sketch and label a picture of this situation.



(b) Sand needs to be purchased based on the area. Use an expression with powers to determine how much sand is needed. **Be sure to include units!**

Area of a square

$$A = s^2$$

$$s^2$$
$$(8)^2$$
$$64$$

You need to purchase enough sand to fill a sandbox that has an area of 64 ft^2 .

Assignment: Page 5 (2 - 42) even

Review:

Add, subtract, multiply, or divide. Leave your answer as an improper fraction when necessary.

1. $\frac{1}{5} + \frac{3}{5}$

2. $\frac{1}{5} + \frac{3}{10}$

3. $\frac{1}{4} - \frac{3}{5}$

4. $4\frac{1}{5} - 2\frac{3}{5}$

5. $\frac{1}{5} \times \frac{3}{10}$

6. $2\frac{1}{4} \times \frac{3}{5}$

7. $\frac{1}{5} \div \frac{3}{5}$

8. $8\frac{1}{2} \times \frac{3}{8}$

9. $\frac{1}{3} \times \frac{3}{5}$