

## Math 6: Week of April 27th

Welcome to Algebra! :)

**Lesson #1:** The Four Operations

**Target:** Find values of expressions involving addition, subtraction, multiplication and division.

**Lesson #2:** Powers and Exponents

**Target:** Write and compute expressions with powers

Directions:

- Go through the slides (notes) and work through the examples on a separate piece of paper. If you have your math notebook, feel free to use it!
- Complete the practice problems on a separate piece of paper.
- Check your answers with the key given at the end of the lesson. If you got one wrong, double check your steps with your notes and recalculate it.
- Are you stuck?
  - Use Google Classroom or Gmail to ask Mrs. Thomas a question.
  - Check your email and Google Classroom for when live video help sessions are available.

## Lesson 1- Vocabulary

**Numerical Expression:** Combinations of numbers and operations.

Examples:  $2 + 2 - 1$        $5 \times 7 + 4 - 2$

**Order of Operations:** Rules to follow when evaluating an expression with more than one operation. (PEMDAS)

- Multiply and divide from left to right.
- Add and subtract from left to right.

### Example 1

Find the value of  $5 \times 8 - 12 \div 3$ .

1. Multiply and divide first. (Work left to right)

$$\begin{array}{r} 5 \times 8 - 12 \div 3 \\ 40 - 4 \\ 36 \end{array}$$

2. Then subtract

When solving, write each answer below the operation. Use your notebook lines and do ONE line at a time. The answer should be the last single number.

### Example 2

Find the value of:

$$20 + 16 \div 4 - 2 \times 9.$$

$$\begin{array}{r} 20 + 16 \div 4 - 2 \times 9 \\ 20 + 4 - 18 \\ 24 - 18 \\ 6 \end{array}$$

- Multiply and divide first; work left to right
- Rewrite what is left over ( $20 +$ )
- Add and subtract; work left to right.

### Example 3

Find the value of:

$$8 + 9 \div 3 - 1$$

$$\begin{array}{r} 8 + 9 \div 3 - 1 \\ 8 + 3 - 1 \\ 11 - 1 \\ 10 \end{array}$$

Find the value of:

$$6.8 \div 2 + 2.1$$

$$\begin{array}{r} 6.8 \div 2 + 2.1 \\ 3.4 + 2.1 \\ 5.5 \end{array}$$

## Practice Problems: Worksheet

Lesson 1~ The Four Operations

Check your work!

Worksheet  
Answers  
Provided Here!

If you're stuck,  
ASK! Help sessions are  
provided each week. Check  
Google Classroom for dates  
and times.

1.  $8 + 4 + 3 \times 2 = 18$   
2.  $5$   
3.  $10$   
4.  $24$   
5.  $18$   
6.  $15$   
7.  $38$   
8.  $2$   
9.  $100$   
10.  $128$   
11.  $4 \times 5 + 6 = 26$   
12.  $42 \div 6 + 3 = 10$   
13.  $8 + 4 \times 3 - 2 = 18$  or  
 $8 + 4 + 3 \times 2 = 18$

Worksheet 1

## Lesson 2- Vocabulary

**Power:** Used when a numerical expression is the product of a repeated factor. It consists of two parts: the base and the exponent.

**Base:** The repeated factor.

**Exponent:** Number of times the factor is repeated.

**Squared:** The second power.

**Cubed:** The third power.

## Powers, Bases and Exponents

$$3^4 = 3 \times 3 \times 3 \times 3$$

### Example 1

Write the numerical expression as a *power*.

$$6 \times 6 \times 6 \times 6 = 6^4$$

$$4 \times 4 = 4^2$$

$$9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 = 9^7$$

### Example 2

Write each power in *expanded form* and find the value.

$$3^2 \rightarrow 3 \times 3 = 9$$

$$1^5 \rightarrow 1 \times 1 \times 1 \times 1 \times 1 = 1$$

$$4^3 \rightarrow 4 \times 4 \times 4 = 64$$

Determine which power has the greater value:

$$1^6 \text{ or } 2^2.$$

$$1 \times 1 \times 1 \times 1 \times 1 \text{ or } 2 \times 2$$

$$1 \text{ or } 4$$

$2^2$  has the greater value

## Practice Problems: Worksheet

### Lesson 2~ Powers and Exponents

Check your work!

Worksheet  
Answers  
Provided Here!

If you're stuck,  
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and times.

Worksheet 2  
1. 4  
2. 6  
3. 13  
4. 37  
5. 72  
6. 9  
7. 25  
8.  $\left(\frac{5}{2}\right)^2$   
9. (5)(5)(5), 125  
10. (2)(2)(2)(2), 16  
11. (3)(3), 9  
12. (4)(4)(4)(4), 256  
13. (6)(6), 216  
14. (1)(1)(1)(1)(1)(1), 1  
15.  $\left(\frac{1}{3}\right)\left(\frac{1}{3}\right)\left(\frac{1}{3}\right)\left(\frac{1}{3}\right)$   
16.  $\left(\frac{4}{1}\right)\left(\frac{4}{1}\right)$   
17. 25  
18. 4  
19. 2, 5, 3

## Lesson 1 ~ The Four Operations

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

**Find the value of each expression. Show all work. Write the problem using notebook paper and USE the lines!**

1.  $9 + 2 \times 3$

2.  $16 \div 4 - 2 + 3$

3.  $12 - 14 \div 7$

4.  $3 \times 4 + 6 \times 2$

5.  $15 \div 5 \times 6$

6.  $23 - 14 + 36 \div 6$

7.  $4 \times 11 - 30 \div 5$

8.  $7 - 3 \times 1 - 2$

9.  $80 + 2 \times 15 - 10$

10.  $6.6 \div 0.6 + 1.8$

**Insert one of the four operations (+, -, ×, ÷) in each box so that the numerical expression equals the stated amount.**

11.  $4 \square 5 \square 6 = 26$

12.  $42 \square 6 \square 3 = 10$

13.  $8 \square 4 \square 3 \square 2 = 18$

## Lesson 2 ~ Powers and Exponents

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

**Write the numerical expression as a power. (Do not solve it.)**

1.  $4 \times 4 \times 4$

2.  $6 \times 6 \times 6 \times 6 \times 6$

3.  $13 \times 13 \times 13 \times 13$

4.  $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

5.  $7 \times 7$

6.  $9 \times 9 \times 9$

7.  $2 \times 2 \times 2 \times 2 \times 2$

8.  $\frac{2}{5} \times \frac{2}{5}$

**Write each power in expanded form and find the value.**

9.  $5^3$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

10.  $2^4$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

11.  $8^2$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

12.  $4^4$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

13.  $6^3$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

14.  $1^6$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

15.  $(\frac{1}{3})^4$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

16.  $(\frac{1}{4})^2$  Expanded Form: \_\_\_\_\_  
Value: \_\_\_\_\_

**Determine which power has the greater value. Show your work to prove the answer.**

17.  $3^3$  or  $2^5$

18.  $4^4$  or  $5^3$

19. List the following from least to greatest:  $5^2$ ,  $3^3$ ,  $2^4$