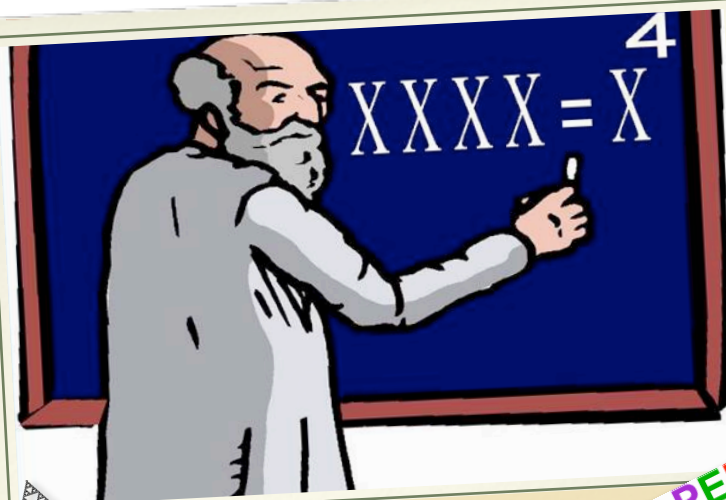
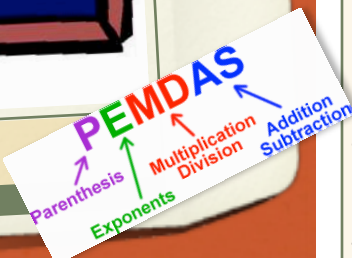


PATTERNS, NUMBERS AND RULES

CHAPTER 3



THE BIG IDEA
THE RULES OF MATH!



To find the answer to a math problem, you have to follow the rules! There are even rules that will help you find answers easier!

CHAPTER 3: PATTERNS, NUMBERS AND RULES

Key Terms

Exponent (Pg 114)

A small, raised number that tells how many times a factor is multiplied. For example in 10^3 , the exponent 3 tells you to multiply 3 factors of 10: $10 \cdot 10 \cdot 10 = 1000$

Input (Pg 113)

The number that has a rule applied to it in the function machine.

Output (Pg 113)

The number that comes out of the machine after a rule has been applied.

Order of Operations (Pg 130)

The order a math problem needs to be solved. PEMDAS: Parenthesis, Exponents, Multiplication, Division, Addition and subtraction.

Sequence (Pg 122)

An ordered List. For example: 2,5,8,11,...

Variable (Pg 114)

A value that changes. For example, the height of trees are different.

Associative Property (Pg 178)

The grouping of numbers when adding or multiplying doesn't change the answer.

Commutative Property (Pg 176)

The order numbers are added or multiplied doesn't change the answer.

Distributive Property (Pg 181)

To multiply a sum by a number, you can multiply the two number in the parenthesis by the number outside first.

GOALS: MAIN IDEAS OF THE CHAPTER

#1: I will be able to Describe millions, billions and trillions.

#2: I will be able to write in exponential form.

#3: I will be able to write in repeated multiplication form.

#4: I will be able to the output of a function when given an input.

#5: I will be able to write terms in a sequence by finding the pattern.

#6: I will be able to use the order of operations to solve problems with many different math operations.

#7: I will be able to write an equation given a rule.

#8: I will be able to identify the associative property.

#9: I will be able to identify the commutative property.

#10: I will be able to identify distributive property.



THINGS TO KNOW & EXAMPLES OF THEM!

Goal #1

How many pennies are there in \$1,000,000?

There are 100 pennies in \$1. So just multiply \$1,000,000 by 100 and get 100,000,000 pennies in \$1,000,000.

Goal #4

INPUT	1	2	3	4
OUTPUT	5	6	?	?

Notice, each output is 4 more than the input. So the missing numbers are 7 and 8.

x	2	4	6	8
2x+4	8	12	?	?

You can either see the pattern or better yet, use the equation you are given! The input is x and the output is $2x+4$. So $x=2$ gives you $2(2)+4=8$, $2(4)+4=12$ and then $2(6)+4=16$ and $2(8)+4=20$.

Goal #5

What are the next 3 terms in the sequence: 5, 10, 20, 40, ...

Well, we notice that $5+5=10$, but that $10+5$ does not equal 20. Next we try multiplication. $5 \times 2 = 10$ and $10 \times 2 = 20$. So $40 \times 2 = 80$ and so on.

Goal #6

PEMDAS

P: Parenthesis
 E: Exponents
 M: Multiplication
 D: Division
 A: Addition
 S: Subtraction

$$6 - (5 - 3) + 10$$

$$= 6 - 2 + 10$$

$$= 4 + 10$$

$$= 14$$

Goal #6

Jack eats 5 times as much candy as donny plus 2 more.

$$J = 5D + 2$$

Goal #10

The distributive property is when you multiply a number outside the parenthesis to the numbers inside before adding:

$$3 \cdot (4 + 1) = 3 \cdot 4 + 3 \cdot 1$$

$$12 + 3$$

$$15$$

CHAPTER 3: PATTERNS, NUMBERS AND RULES

Suggestions

Here are some things you should do now, and always!

Things to know:

Vocabulary

Make sure you are studying your vocabulary! You get quizzed on it often, but it is also very useful to know when you are reading and writing word problems.

Math Facts

Make sure you are studying your math facts. These are very important each and every day in and out of math. Ask for some suggestions if you are having trouble! Go to my website and find fun links to go and practice!



Things to do:

Always do these things...

Pay attention in class.
 Fill out your class notes everyday.
 Raise your hand and ask questions.
 Come after school for help.
 Do your homework every night.
 Use the resources on the books website.

Look over these things...

Class notes.
 On your own problems in book.
 Book website.
 This study guide!
 Any quizzes taken this chapter.
 Look through your book and make a note of what you are not understanding.



Problems to practice

Problems in your book to practice:

Pg 117 #'s: 3-16, 18.

Pg 84 #'s: 3-5, 6, 10, 12-14, 23.

Pg 100 #'s: 1, 2, 6, 17, 25.

"Genius is one per cent inspiration and ninety-nine per cent perspiration.

Accordingly, a 'genius' is often merely a talented person who has done all of his or her homework."

Thomas Edison
 Inventor

