Grade 6 Ch 1 Notes ~ Holt

You may have to provide more examples.

You will have to supply problems for guided practice.

Objective- The students will be able to compare, round, and estimate using Whole Numbers.

Whole Numbers - { 0, 1, 2, 3, 4, …}

All numbers in base 10 are made up of 10 digits; 0, 1,2,3,4,5,6,7,8, and 9. The value of a digit depends up its placement within a number – place value.

In base 10, we have columns; 100,000 10,000, 1000, 100, 10, 1.

…	100,000's	10,000's	1000's	100's	10's	1's
…	…	…	…	…	…	…

The digit's value is determined by the specific column in which it is located. The 5 in the following two numbers have different values.

Ex. 53, the 5 has the value of 5 tens or 50

Ex. 1,548, the 5 has the value of 5 hundreds or 500

Writing a Number in Expanded Notation

To write a number in expanded notation, you write each digit as a product of that digit and it's place value and find their sum.

Ex. Write 73 in expanded notation.

$7(10) + 3(1)$

Ex Write 543 in expanded notation

$5(100) + 4(10) + 3(1)$

Ex. Write 1,207 in expanded notation

$1(1000) + 2(100) + 0(10) + 7(1)$

Writing a Number in Word Form

Ex. Write in word form, 73

Seventy-three

Ex. Write in word form, 705

Seven hundred five

Ex. Write in word form, 2,356

Two thousand three hundred fifty-six

Symbols for "less than" or "greater than"

The symbol "<" means *less than* in mathematics. To say 4 is less than 5, we would write $4 < 5$.

The symbol ">" means *greater than* in mathematics. To say 12 is greater than 8, we would write $12 > 8$.

HINT – ***The point of the sign is always aimed at the smaller number***

Ex. Use "<" or ">" to compare the following numbers.

a. 567 ___ 871
b. 352 ___107

Ex. List the following numbers from least to greatest.

a. 176, 384, 235, 87
b. 2123, 2078, 2055

Rounding Numbers

To round a number, look at the digit to the right of the place you are rounding.

a. if that digit is 5 or more – round up.
b. If that digit is less than 5, round down

Ex. Round to the nearest hundred.

a. 4,321 b. 5,786 c. 782

Ex. Round to the nearest 1000

a. 4,321 b. 5,786 c. 782

Objective- The students will be able to compute and write numbers in exponential notation.

Exponent tells how many times the base is used as a factor.

2^3 - exponent
|
base

In the number 2^3, read 2 to the third power or 2 cubed, the 2 is called the base and the 3 is called the exponent.

Ex. $2^3 = 2 \times 2 \times 2$

Ex. $5^2 = 5 \times 5$

Ex. $6^4 = 6 \times 6 \times 6 \times 6$

To write an exponential in **standard form**, compute the products. i.e. $5^2 = 5 \times 5 = 25$
25 is written in standard form.

Special Case

Ex. $10 = 10$
$10^2 = 100$
$10^3 = 1{,}000$
$10^4 = 10{,}000$

$10^6 = 1{,}000{,}000$

Do you see a pattern that would allow you to find the value of an exponential with base 10 quickly?

Δ - If a number does not have an exponent, it is understood to be ONE!

Objective- The students will be able to evaluate an expression using the Order of Operations and the Properties of Real Numbers.

The Order of Operations is just an agreement to compute problems the same way so everyone gets the same result – like wearing a wedding ring, driving on the right side of the road or listing sporting events.

Order of Operations

1. Parentheses
2. Exponents
3. Multiply/Divide from left to right
4. Add/Subtract from left to right

Ex. Evaluate the following expressions.

a. $3 + 5 \times 2$

b. $4 + 24 \div 6 \times 2 + 1$

c. $8 \div (1 + 3) \times 5^2 - 2$

Properties of Real Numbers

The properties of real numbers are rules used to simplify expressions and compute numbers more readily.

Commutative Property – Addition	$a + b = b + a$	ORDER
Commutative Property – Multiplication	$a \times b = b \times a$	

Ex. $4 + 5 = 5 + 4$

Ex. $10 \times 7 = 7 \times 10$

Associative Property – Addition	$(a + b) + c = a + (b + c)$	GROUPING
Associative Property – Multiplication	$(a \times b) \times c = a \times (b \times c)$	

Ex. $(7 + 8) + 2 = 7 + (8 + 2)$

Ex $(13 \times 25) \times 4 = 13 \times (25 \times 4)$

Distributive Property a x (b + c) = a x b + a x c Distribute **OVER**-add/sub

Ex. 5 x 23 = 5 x (20 + 3)
= 5 x 20 + 5 x 3
= 100 + 15
= 115

Ex. 25 x 12 = 25 x (10 + 2)
= 25 x 10 + 25 x 2
= 250 + 50
= 300

Objective – Students will be able to identify patterns and find the missing terms of sequences.

Sequence- a set of numbers in a particular order. Each number is called a *term* of the sequence.

Arithmetic Sequence – is a sequence in which every term after the first is obtained by adding a fixed number.

Ex. 5, 10, 15, 20, 25, …

Ex. 2, 7, 12, 17, 22, …

Ex. 3, 11, 19, 27, 35, …

A strategy to use to find the next term in a sequence is to subtract the terms, notice $11 - 3 = 8$, $19 - 11 = 8$, $27 - 19 = 8$. That would suggest you are adding 8 to each term to find the next term.