



STUDENT _____ GROUP _____

INSTRUCTOR _____ DATE _____

Math Lab Lesson #1 Classwork:
Review of Numbers and Operations

★ **Video#1: Base 10 System Basics**

★ **Example:** Decompose the natural number “53,492” using the base – 10 system.

➔ 1. Decompose the natural number “25,379” using the base – 10 system.

2. Decompose the natural number “473” using the base – 10 system.

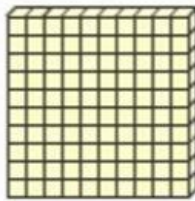


3. Jim is trying to decompose the natural number “4,526” using the base – 10 system. His work is shown below:

$$4,526 = 4 \times 10^3 + 5 \times 10^x + 2 \times 10^1 + 6 \times 10^0$$

What is the value of x ?

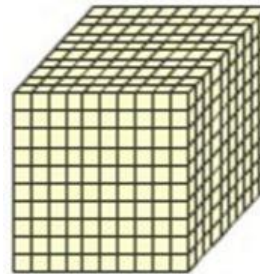
4. Match the picture with the “power of 10” expression below:



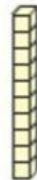
10^3



10^2



10^1



10^0

5. Find the product 12×11

6. Write an expression that shows the product 12×11 using our base – 10 system.



★ Video#2: Natural Numbers, Integers, and Closure

★ **Example:** What are natural numbers? What are integers? What does it mean to say that numbers are “closed” under an operation?

Definitions:

Natural Numbers:

Integers:

The natural numbers are **closed** under addition because



1. Draw lines to connect the numbers on the left with the appropriate type of number on the right. **Note: there may be more than one correct type for any given number.**

<u>NUMBER</u>	<u>TYPE OF NUMBER</u>
2	Natural Number
-5	
72	Integer
-36	
14	Neither
$\frac{1}{2}$	

2. a) What type(s) of numbers are all of the positive whole numbers?

b) What type(s) of numbers are all of the negative whole numbers?

3. **Circle the two (2) sentences** that best describes the relationship between natural numbers and integers.

- a) All natural numbers are integers
- b) All integers are natural numbers
- c) Some natural numbers are not integers
- d) Some integers are not natural numbers



4. Which equality shows that the natural numbers are **closed** under multiplication?

A) $2 \times (-3) = -6$

B) $2 \times 3 = 6$

C) $(-2) \times (-3) = 6$

D) $2 + 3 = 5$

5. Which equality shows that the natural numbers are **not closed** under subtraction?

A) $10 - 7 = 3$

B) $10 - (-7) = 17$

C) $10 \times (-7) = -70$

D) $7 - 10 = -3$

6. Write another equation to show that the natural numbers are not closed under subtraction.

7. Are the natural numbers closed under division?



★ Video#3: Operating with Negative Integers

★ Example: a) How can we rewrite the expression $7 - 2$?

b) Why is it that “a negative times a negative is a positive” ?

➡ 1. Rewrite the expression $5 - 9$ in two different ways.

2. Rewrite the number -24 as the product of two negative integers. Do it again. And again.

3. Rewrite the number -24 as the product of three integers.



★ Video#4: The Distributive Property and Factoring

★ **Example:** a) Find the product $4(3 + 2)$ using the distributive property

b) Factor the sum: $12 + 8$

c) Factor the sum: $4x + 8$

d) Find the sum: $3x + 5x$

The big idea of the Distributive Property: $A(B + C) =$

The big idea of factoring:

e) Find the product using the distributive property.

$$-4(11 - 3)$$

f) Factor the difference $28 - 7x$



1. Use the distributive property to simplify the following expressions:

a) $4(x + 2)$	b) $-6(x - 7)$	c) $-3(x - 5)$
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2. Factor the following expressions:

a) $6x + 18$	b) $3x - 21$	c) $-30 + 25x$
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3. Brian and Aaliyah are trying to factor the expression $6x + 6$.

Brian thinks that the factorization should be $6(x + 0)$

Aaliyah thinks that the factorization should be $6(x + 1)$

Who is correct?

Where did Aaliyah get the "1" in her expression from?

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1. Which expression is not equivalent to $12 - 3$?

- A) $12 + (-3)$
- B) $-3 + 12$
- C) $-1(-12 + 3)$
- D) $3 + (-12)$

2. Juan has just learned the distributive property, and he is very excited to try it out!

His work is shown below:

$$\begin{array}{l} \text{Step 1} \left\{ \begin{array}{l} -5(10 - 3) \\ -5(10) - 5(-3) \end{array} \right. \\ \text{Step 2} \left\{ \begin{array}{l} -5(10) - 5(-3) \\ = -50 - 15 \end{array} \right. \\ \text{Step 3} \left\{ \begin{array}{l} = -50 - 15 \\ = -65 \end{array} \right. \end{array}$$

Where did Juan make a mistake?

- A) Step 1
- B) Step 2
- C) Step 3
- D) Juan didn't make any mistake, looks good to me!

3. Amineta is practicing factoring expressions. Her work is shown below. Which factorization is **not correct**?

- A) $4x + 12 = 4(x + 3)$
- B) $4x - 12 = 4(x - 3)$
- C) $12 - 4x = -4(3 - x)$
- D) $12 - 4x = -4(x - 3)$