ADULT LEARNING ACADEMY

PRE-ALGEBRA WORKBOOK

UNIT 6: INTEGERS

Debbie Char and Lisa Whetstine
St. Louis Community College
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MoHealthWINs

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Adult Learning Academy
Pre-Algebra Workbook
UNIT 6: INTEGERS

LEARNING OBJECTIVES

1. **Integer Basics:**
   - ☐ Write and describe signed numbers
   - ☐ Order and compare integers, using appropriate symbols to express inequalities

2. **Operations with Integers**
   - ☐ Add positive and negative integers
   - ☐ Subtract positive and negative integers
   - ☐ Multiply positive and negative integers
   - ☐ Divide positive and negative integers

3. **Absolute Value:**
   - ☐ Define *absolute value*, find the absolute value of any integer, and evaluate expressions involving absolute value
   - ☐ Order and compare absolute values; use appropriate symbols to express inequalities

4. **Exponents, Roots, and Scientific Notation:**
   - ☐ Evaluate integers with roots and exponents
   - ☐ Apply the basic rules of exponents, including rules for positive and negative base numbers, and raising numbers to the zero and first power
   - ☐ Write numbers in scientific notation
   - ☐ Convert numbers in scientific notation to standard notation

5. **Order of Operations:**
   - ☐ Use the order of operations rules to perform calculations involving integers, absolute values, and exponents

6. **Word Problems:**
   - ☐ Solve basic word problems that involve signed numbers, including applications to the healthcare industry

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UNIT 6 VIDEO & EXERCISE LIST

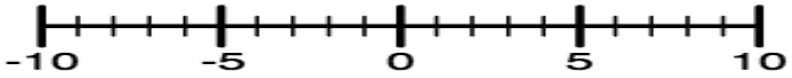
MO HEALTH WINS

Topic	Website	Videos	Exercises
Negative Number Basics	www.khanacademy.org	Negative Numbers Introduction	Number Line 2
		Ordering Negative Numbers	Ordering Negative Numbers
			Number Line 3
Adding Integers	www.khanacademy.org	Example: Adding Negative Numbers	Adding Negative Numbers
		Ex: Adding integers w/ diff. signs	
Subtracting Integers	www.khanacademy.org	Why subtracting neg is adding positive	Adding and Subtracting Neg Num.
	www.stlcc.edu	Subtracting Integers PPT on Blackboard	
		Adding/Sub Negative Numbers	
Multiplying/Dividing Neg #	www.khanacademy.org	Multiplying Pos and Neg Numbers	Mult/Div Negative Numbers
		Why Neg x Neg is positive	Negative Number Word Probs
		Dividing Pos and Neg Numbers	
		Example: Mult #'s w/ diff signs	
		Mult and Div Negative numbers	
Absolute Value	www.khanacademy.org	Absolute Value and Number Lines	Finding Absolute Values
		Absolute Value 1	Comparing Absolute Values
		Absolute Value of Integers	
		Comparing Absolute Values	
Exponents	www.khanacademy.org	Level 1 Exponents	Positive and Zero Exponents
		Understanding Exponents 2	
Scientific Notation	www.khanacademy.org	Scientific Notation	Scientific Notation
		Scientific Notation 1	
Square Roots	www.khanacademy.org	Understanding Square Roots	Square Roots
Unit 6 Review Flashcards	www.stlcc.edu	Powerpoint on Blackboard	
Compass Review	http://www.hostos.cuny.edu/oaa/compass/pre-alg_prac4.htm		Signed Numbers

To ADD Integers:	**EXAMPLES:**
Positive + Positive =	4 + 5 =
Negative + Negative =	-4 + (-5) =
Positive + Negative: That DEPENDS on which number has the larger absolute value!	4 + (-5) =
	-4 + 5 =
	-5 + 5 =

To SUBTRACT Integers:	**EXAMPLES:**
ADD the OPPOSITE!	4 – 5 =
	4 – (-5) =
Remember that subtracting a negative is the same as adding a positive!	-4 – 5 =
	-4 – (-5) =

To MULTIPLY or DIVIDE Integers:	**EXAMPLES:**
Positive x Positive =	10 x 5 =
Positive ÷ Positive =	10 ÷ 5 =
Negative x Negative =	-10 x (-5) =
Negative ÷ Negative =	-10 ÷ (-5) =
Positive x Negative =	10 x (-5) =
Positive ÷ Negative =	10 ÷ (-5) =
Negative x Positive =	-10 x 5 =
Negative ÷ Positive =	-10 ÷ (5) =



1. On the number line above,
   a) Draw a star where -6 would be.
   b) Draw a heart where -3 would be.
   c) Draw a smiley face where the OPPOSITE of -8 would be.

2. What is the absolute value of -127?

3. Simplify:

a) $-7 + 0$ b) $-7 + -3$ c) $-7 + 8$ d) $-8 + 7$

e) $|7 + -3|$ f) $0 - 3^2$ g) $-5 + 2(-3)$ h) $(1 - 5)^2$

i) $\sqrt{81}$ j) $6 - (-8)$ k) $|-6 \times 7|$ l) -9^2

4. Write in scientific notation:

a) 45,700,000 b) .00039

5. Write in standard notation:

a) 5.4×10^{-6}
b) 5.2×10

I. Scientific Notation: For each of the following facts, write the number in scientific notation.

* There are an average of 140,000 hairs on a person's head.

* Your brain has approximately 100,000,000,000 (one hundred billion) cells.

* A rhinovirus is .000000020 meters long.

For each of the following facts, write the scientific notation as a standard number:

* The human heart beats approximately 2.7×10^{9} times in a lifetime.

* Human hair grows at about 1.0×10^{-8} miles per hour.

* There are about 3.0×10^{13} red blood cells in the human body.

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II. Scenario: A patient's weight has fluctuated over the past six months:

STARTING WEIGHT:	**150.7 pounds**
1 month	2.9 pounds lost
2 months	1.3 pounds gained
3 months	4 pounds lost
4 months	3.2 pounds lost
5 months	3 ½ pounds gained
6 months	2 ¾ pounds lost

What is the patient's weight after 3 months? _____

What is the patient's weight after 6 months? _____

Did the patient gain or lose overall? How much? _____

III. Scenario: You run a medical office. Here is your account sheet for the past year. Fill in each of the blank spaces with the appropriate numbers.

Category	Frequency Per year	Amount	Expense or Income?	TOTAL
Cleaning	24	$225.50	Expense	
Space rental	12		Expense	$ 126,000
Supplies		$2,327.50	Expense	$19,965
Malpractice Insurance	12	$4,250.75	Expense	
Patient Payments	12	$10,000	Income	

How did your office do overall this year? Did you make money or lose money? How much?

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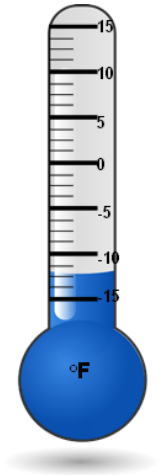
IV. Scenario: Fill in following table of temperature changes.

Beginning Temperature	Ending Temperature	Change from beginning to end
27.5 degrees	23.2 degrees	
-5.6 degrees	7.8 degrees	
83.1 degrees		100.6 degree decrease
	-14.1 degrees	7.9 degree decrease
	-12 degrees	5.2 degree increase

V. Graphic Practice:

a) What is the temperature on this thermometer?



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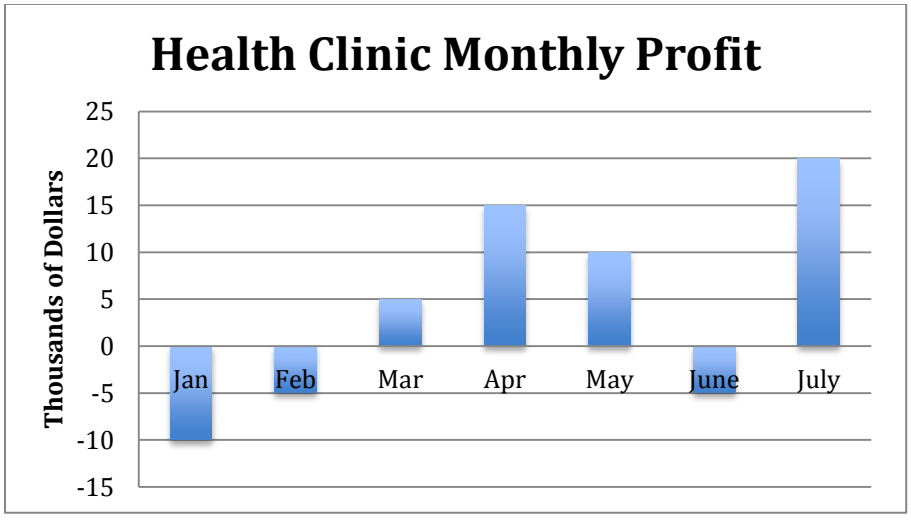
b) Use the graph below to answer the questions.



a) During which months did the clinic lose money?

b) Which month had the worst loss?

c) Which month showed the most improvement over the previous month?

d) Which month showed the worst drop over the previous month?