Title: Get a Line on Integers

Brief Overview:

After studying whole and natural numbers, it becomes obvious that one cannot apply them to all situations. Therefore it is necessary to introduce another system of numbers. This system is called Integers, which allows one to explore numbers greater than and less than zero. The students will be able to grasp the concept of integers and apply it to the four basic operations (addition, subtraction, multiplication and division). They will use manipulates such as counters and number line to illustrate rules pertaining to integers. Students will also apply integers to everyday life situations.

NCTM Content Standard/National Science Education Standard:

- Understand the meaning and effects of arithmetic operations with fractions, decimals, and integers
- Develop meaning for integers and represent and compare quantities with them.
- Use the associative and commutative properties of addition and multiplication and the distributive property of multiplication over addition to simplify computations with integers, fractions, and decimals

Grade/Level:

Grades 6 - 8

Duration/Length:

Times: 3-90 minute lessons

Student Outcomes:

Students will:

- Define and identify integers
- Plot integers on a number line
- Use a number line to identify zero pairs
- Use positive and negative counters to model addition of integers
- Add integers
- Subtract integers using models and rules
- Multiply and divide integers

Materials and Resources:

1. Transparences
2. Positive and Negative Integer counters
3. Integer counter mats
4. Markers
5. Calculators
6. Resources worksheets
7. Overhead projector
8. Masking tape
9. Number line
10. Magnet strips or some other item to post objects to blackboard
11. Construction paper
12. 5 red tees or jerseys and 5 white tees or jerseys
13. White boards

Development/Procedures:

Lesson One:

Pre-assessment-
Displayed on the board is a large integer number line, with lines only, for positive and negative integers. Several magnetized cards (Cut cards using ***Teacher Resource 1*** and attach magnets) with various integers are distributed to members of the class. Ask these individuals to place their integers on the appropriate spot on the number line. Then ask the class, by show of hands, to decide whether each integer has been placed in the proper position. The teacher should record these voting results. (Leave this display on the board for later reference.)

Launch:

- The students will participate in a pair-share activity to develop an understanding of the concept of integers. Each group of students is given a scenario and diagram, identifying and illustrating locations traveled to during a day of shopping at the local mall. (***Math at the Mall, Numbers at the Mall***)
- The students are asked to develop a system of labeling each location that will indicate where, in relation to other stops, each landmark can be found. The boys and girls, upon completion of this task, will share their labeling systems to the class.
- The teacher will then state that there is a mathematical way of labeling the various locations visited at the mall. This method utilizes a new group of numbers.

Teacher Facilitation:

- The teacher will display a transparency to review the concepts of Whole Numbers (0; 1; 2; 3; 4….). (***Teacher Resource 2a***)
- The instructor should then remind the students of the mall labeling activity and ask if anyone knows of another group of numbers to label locations found below the ground level (level 0) of the mall.
- An overlapping transparency is now displayed, indicating the new classification of numbers, Integers. (***Teacher Resource 2b***)Explain to the students that overlapping circles are used to show that all whole numbers and negative numbers are integers.
- Each student is given a Math Vocabulary graphic organizer ***(Math Vocabulary***) to record and define "Integers." He/She enters the vocabulary word "Integers" into the center box, labeled "WORD." The student then creates his/her own definition in the box labeled "DEFINITION-IN YOUR OWN WORDS." When the students have completed this, several should be asked to share their definitions. (See sample ***Math Vocabulary*** graphic organizer)
- Using math books, dictionaries, or other resource materials, the mathematical definition should be recorded in the box, labeled, "TEXT DEFINITION." Through teacher-generated class discussion, several examples of integers should be identified and recorded in the box labeled, "EXAMPLES." The teacher then asks for suggestions of numbers that would not be examples of integers. These should be recorded in the box, "NON-EXAMPLES." Each student should place this completed organizer in the vocabulary section of his/her binder.
- The instructor displays a transparency of a whole-number number line and an integer number line. (***Teacher Resource 3)*** The students are asked to compare the two, citing differences. They should observe that while the whole number line begins at zero, the integer number line displays negative numbers, in addition to zero and whole numbers. The teacher asks for suggestions for the name of the numbers above zero and those below zero.
- Using the transparency, label numbers above zero as POSITIVE INTEGERS (t) and those below zero as NEGATIVE INTEGERS (-). Explain that, just as in subtraction, you locate a NEGATIVE integer by counting to the LEFT of zero and you locate a POSITIVE integer by counting to the RIGHT.
- Using a large number line taped to the floor, the students are asked to move up and down the line, starting at zero, following the expressions written on the board. This exercise is used to help the students discover the rule of the "zero pair." As combinations are written on the board, they will be asked to:

  move +3, and -3
  move -2, and +2
  move +4, and -4…

- By moving back and forth from zero, they will discover that the same the number as a positive and a negative will equal zero (zero pair).
- To reinforce this concept, the students play "**Rolling for Zeros**" to practice counting up and down the number line. (Game sheet is provided.)

Student Application:

- Upon completion, the students will pair/share their discoveries, related to their activities with integer number lines and "**Rolling For Zeros**." (See ***Rolling for Zeros*** worksheet) If an error has been made by one of the students, his/her partner must use the number line to demonstrate the correct response.

Embedded Assessment:

- Each student uses a journal to record his/her version of the definition of integers and where numbers are placed on the number line. Students should also draw a number line and discuss positive and negative movements on a number line.
- Class members now examine the number line on the board and evaluate the placement of each integer. If any placements are incorrect, corrections should be made at this time.

Reteaching/Extension:

- For those students who are having difficulty with the identification of integers, the instructor will provide an additional practice sheet in a sorting format. (***Is This Number an Integer?***) The students with work with a partner to complete this task.
- Students that comprehend integers well should look for common print resources (magazines, newspapers, books, etc..), locate integers within and describe in their journals for what purpose are the integers being used.
- Student should investigate how integers are used in the sports world such as when keeping score in football, hockey, golf or bowling.

Lesson Two

Pre -assessment:

- Students work in groups four
- Students should discuss their definitions and examples recorded during the previous lesson for the vocabulary word "Integer" on the ***Math Vocabulary*** graphic organizer.
- Each group should record any questions or uncertainties
- Each group shares questions with the class. The teacher facilitates the discussion and provides answers and clarifications as needed to ensure full class understanding what an integer is.

Launch:

- While still in their groups student should play the Human Counter Game. (***Teacher Resource 4***)
- After completion of the Human Counter Game, students are to work in their groups to decide on rules for adding integers. Groups should write their rules , on a large piece of construction paper, using a large font.
- Make a gallery wall of all integer addition rules obtained from each group.
- The writer from each group (assigned during the Human Counter Game) should read their group derived rules to the class. The class should come take a vote on which set of rules is most likely correct.

Teacher Facilitation:

- Distribute a set of 15 positive and negative counters to each group member. Ensure that all group members have a integer counter mat on which to place the counters. Explain to students that they will use the counters to model integers and integer equations with integer answers. Mention and demonstrate to students that they can use the counters to represent zero pairs as in the Human Counter Game.
- Explain to students that there are four important ground rules to keep in mind when modeling integers with the counters and integer mats:
  1. All modeling is to be done on the integer counter mat
  2. The integer counter mat always has a value of zero when there are no counters on it.
  3. When one positive counter is paired with one negative counter on the mat, the combination is called a zero pair and has a value of zero.
  4. Zero pairs can always be added and removed from the mat without changing the collective value of the counters on the mat.
- Demonstrate for students how to model the expression $-2 + (-4)$ with the counters on the integer mat. Remind students that when they added $2 + 4$ in the past, the expression represented a combining of a set of two items with a set of four items. The resulting sum was (+6) Explain to students that the expression $-2 + (-4)$ represents something similar. It represents a combination of a set of two negative items with a set of four negative items.

- Have students place 2 negative counters and 4 negative counters on their integer mats. Explain to students that since there are 6 negative counters on the mat, the sum is (–6). Write the following equation on the board:
  -2 + (- 4) = - 6**.**
- Ask students to model the expression – 4 + 2. Have students place 4 negative counters and 2 positive counters on the mat. Suggest to students that they look for zero pairs and remove them from the mat in a similar manner as to what was done in the Human Counter Game. Remind students that removing zero pairs will not change the collective value of the counters on the mat.
- Distribute ***Modeling Addition and Subtraction of Integers*** sheet. This sheet contains addition and subtraction of integer expressions. Ask groups to discuss and model each of the addition expressions using integer counters and integer mats. Remind students to make sure that they remove all integer pairs from the mat prior to making a determination of what the integer answer should be.
- Walk around for student observation and to provide clarification as needed.
- Share with students the answers for each addition problem that was to be modeled on the ***Modeling Addition and Subtraction of Integers*** sheet.
- Explain to students that the class is going to now explore modeling integer subtraction expressions . Demonstrate how to model (-4) – (-2) on the integer mat. Explain to students that counters representing the first number only should be placed initially on the math. Place four negative counters on the mat. Explain that the counters that collectively represent the value of the second number must be removed from the counters already on the mat. Remove two negative counters from the mat. Write the expression and integer answer on the board. (-4) – (-2) = (-2). Explain to student that this answer is should on the mat since there are still two negative counters on the mat.
- Demonstrate to students how to model (-4) – (+2) with the counters and mat. Explain to students that after the four negative counters have been added to the mat, by visual inspection it is obvious that there are no positive counters on the mat. So as presently represented, two positive counters can not be removed from the mat. Remind students that zero pairs can be added to the mat without changing the value of the counters currently displayed on the mat. Model adding two zero pairs onto the mat such that there are now six negative counters and two positive counters. Explain to students that adding the zero pairs creates the positive counters needed to perform the operation as indicated in the expression. Remove the two positive counters from the mat. Write the expression and answer on the board (-4) – (+2) = -6 since there are six negative counters remaining on the mat.
- Ask student groups to complete the ***Modeling Addition and Subtraction of Integers*** sheet by modeling the subtraction expressions and recording the integer answers. Walk around and answer questions and provide clarification as needed. Provide answers for each expression on the board.

- Ask students to open their notebooks and record the following 3 rules for addition and subtraction of integers:
    1. To combine like sign integers, added them and assign the resulting answer the same sign
    2. To combine like different sign integers, subtract them and assign the resulting answer the same sign of the number in the expression with the highest absolute value
    3. The absolute value of an integer is determined by finding its positive distance from zero on the number line.

Student Application:

- Allow each group to create a colorful poster displaying rules for addition and subtraction of integers. The posters should include sample expressions and the integer answers. Students should also include references to the use of integer counters to model addition and subtraction of integer problems.

Embedded Assessment:

- Ask students to refer back to the derived rules for addition that the each group presented earlier. Have students summarize in their journals what they understand about the rules of adding and subtracting integers. Students should also indicate what changes, if any, need to be made to the addition of integer rules suggested by their group earlier in the lesson.

Reteaching / Extension:

- Students having problems recalling the addition and subtraction of integer rules should use the integer counters to model expressions on the worksheet ***Getting a Line on Adding and Subtracting Integers*** as an added practice. After completing the modeling for problems on the worksheet and checking answers for accuracy, students should write reflections on their journals regarding what they understand about the addition and subtraction of integer rules..
- Students comfortable with the rules for addition and subtraction of integers should attempt to model the process of adding and subtracting integers using a number line. They should verify the answers obtained from the number line using the integer counters and a calculator.

Lesson Three

Preassessment –

- Group students into pairs.
- Distribute to each pair a number of integer counters for use during activities and a calculator. Explain to students that they are not to use the calculators until instructed to do so later during the lesson.
- Remind students that in previous lessons addition and subtraction of integers were explored.
- Read the objective to students (**Objective- TSWBAT Multiply and divide integers**) explaining that today the properties of multiplying and dividing integers will be explored. Further explain that the two operations are being discussed together because the rules for multiplication of integers apply to the division of integers as well. Explain that the rules are for the multiplication of integers will be explored first.
- Activate student prior knowledge by mentioning that whole numbers are integers and that they already know how to multiply whole numbers
- Indicate that the examination of the process for multiplying whole numbers might shed some light on how to multiply all integers.
- Ask students to explain what it means to multiply 3 x 2.
  Attempt to get students to mention that a relationship exists between multiplication to addition.
- Verbally assess students understanding of the relationship of multiplication to addition by listening to and providing feedback into the answers they provide. Write the following expansion on the board:

$$3 \times 2 = 3 + 3 \text{ or } 2 + 2 + 2$$

Launch –

- Direct student pairs to now use their integer counters to model the product of 3 x 2 using properties of addition. Ask them to come up with at least two other multiplication problems and to model the products of whole numbers with addition using their integer counters.
- Mention to students that it is clear that whole number multiplication problems can be modeled using the integer counters using properties of addition.

Teacher Facilitation –

- Mention to students that we would now like them to extend the use of their integer counters to model the multiplication of integers.
- Ask students to share what are the sign values possible for the products of integers. Guide them to understand that only positive or negative products will result.

- Distribute to students the ***Investigating Integer Multiplication*** worksheet.
- Have students work in pairs determining which integer counter (either positive or negative) would be used to model the product of the multiplication of the integer values shown. Students should be instructed to complete the worksheet and be prepared to discuss their choices with the entire class.
- Facilitate a class discussion with students allowing them to share their thoughts of which integer counters to use for each problem on the worksheet. Do not provide the actual answer as to what the integer multiplication rules are.

Student Application –

- Have student pairs re-examine their ***Investigating Integer Multiplication*** and choice of integer counter for each problem. Instruct them to consider the various arguments presented in class and determine if they would keep their integer counter choices as is or if they would make any changes.
- After students have had the opportunity to discuss or make any changes instruct students to examine their integer counter choices along with the problems on the ***Investigating Integer Multiplication*** worksheet.
- Ask students to consider what general rule might they devise for the multiplication of integers based on their answer integer counter choices and any patterns they can recognize in examining their ***Investigating Integer Multiplication*** worksheet.
- Students should compete parts A & B of the ***Investigating Integer Multiplication*** worksheet.
- Students should next complete the "Testing your rule" section of the ***Investigating Integer Multiplication*** worksheet by using their devised multiplication of integer rules to calculate the products for the multiplication problems given. Once completed, students should check their product answers using calculators.
- Share the following rules with students as the formal rules for the multiplication of integers:

    1. The product of two integers with the same sign is positive
    2. The product of two integers with different signs is negative

- Remind students that at the beginning of the lesson, they were told that the rules for multiplying integers were closely related to the rules for dividing integers.

- Provide students with the following formal definition for dividing integers:

1. The quotient of two integers with the same sign is positive
2. The quotient of two integers with different signs is negative

Embedded Assessment –

- Independent practice: Distribute to students the ***Practice Multiplying & Dividing Integers*** worksheet. Work through the first two problems with the entire class.
- Next explain that students are to complete the remaining portions of the worksheet and that this is to be an independent practice activity. The use of calculators is prohibited for this practice activity. Students can however use their integer counters if they would like to model the multiplication problem using properties of addition.
- Circulate about the room verbally assessing student comprehension and providing clarification as needed.

Reteaching/Extension –

- After students have completed the ***Practice Multiplying & Dividing Integers*** worksheet, address student areas of concern by asking students to share which multiplication and/or division problems on the worksheet were the most difficult to solve. Work these problems through for the class providing clarification for any misunderstandings as needed. Also, share resolutions to common mistakes you've observed students making on the worksheet as you circulated about the room during the independent practice activity.
- Once the review/assessment period has concluded ask students how might they extend the formal definitions of multiplying two integers to finding products of more than two integers. Provide students with the following example on the board for this discussion:

  3 x 2 x -5

- Ask students how might they extend the use of the multiplication rules to multiplying integers that are enclosed in parenthesis. Provide students with the following example:

  -5(2 + -7)

- Closure: Remind students that the goal today was to learn the rules for multiplying and dividing integers. Ask students to complete the ***Exit Ticket*** which requests students to solve integer operations problems.

Summative/Assessment:

- Students will complete ***Integer Relay*** worksheet

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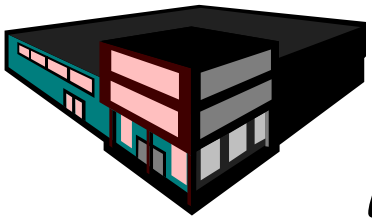
4	**0**	**-3**
-2	**1**	**-6**



Math at the Mall!

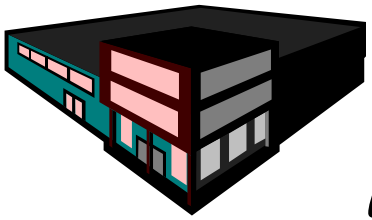
Suppose you and your family decided to take a trip to the local mall one afternoon. The mall has six levels. Three of the levels are below ground level. The bottom most level is to be used for parking only while the remaining five levels are shopping levels. After your family car is parked in the underground parking level, you proceed to the elevator in order to get to any one of the stores in the mall.

Instructions:

A. Examine the layout of the mall posted on the overhead slide. Complete the chart below by writing in the store name located on each level.

B. How might the elevator buttons be numbered if the button representing the ground level is identified with the number **0** ?

Mall floor levels	**Store**	**Elevator button numbers**
Highest level		
Upper level		
Ground		0
Lower level		
Lowest level		
Parking		



Math at the Mall!

Suppose you and your family decided to take a trip to the local mall one afternoon. The mall has six levels. Three of the levels are below ground level. The bottom most level is to be used for parking only while the remaining five levels are shopping levels. After your family car is parked in the underground parking level, you proceed to the elevator in order to get to any one of the stores in the mall.

Instructions:

C. Examine the layout of the mall posted on the overhead slide. Complete the chart below by writing in the store name located on each level.

D. How might the elevator buttons be numbered if the button representing the ground level is identified with the number **0** ?

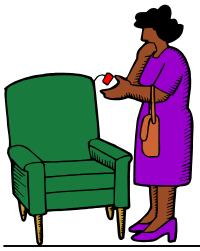
Mall floor levels	**Store**	**Elevator button numbers**
Highest level	Appliances	2
Upper level	Furniture	1
Ground	Pharmacy	0
Lower level	Food	-1
Lowest level	Electronics	-2
Parking	Garage	-3

Numbers at the Mall

Directions: Use this mall diagram to complete the Math at the Mall worksheet

Appliances

Highest Level



Furniture

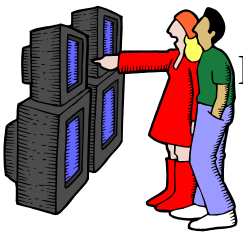
Upper Level

Pharmacy

Ground Floor

Food

Lower Level

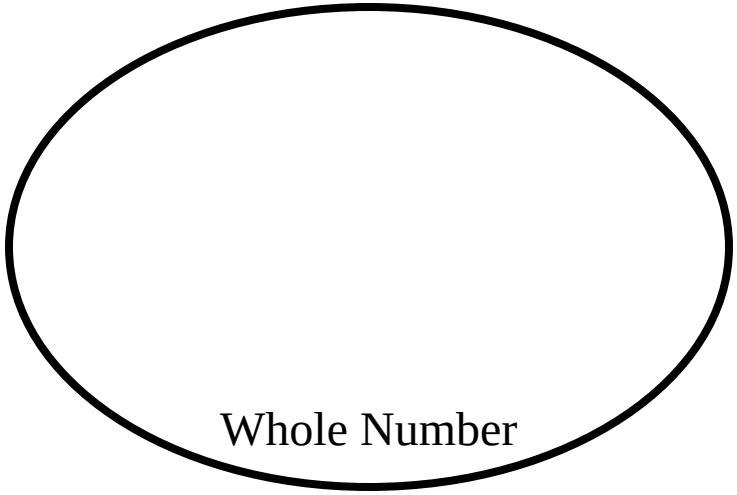


Electronics

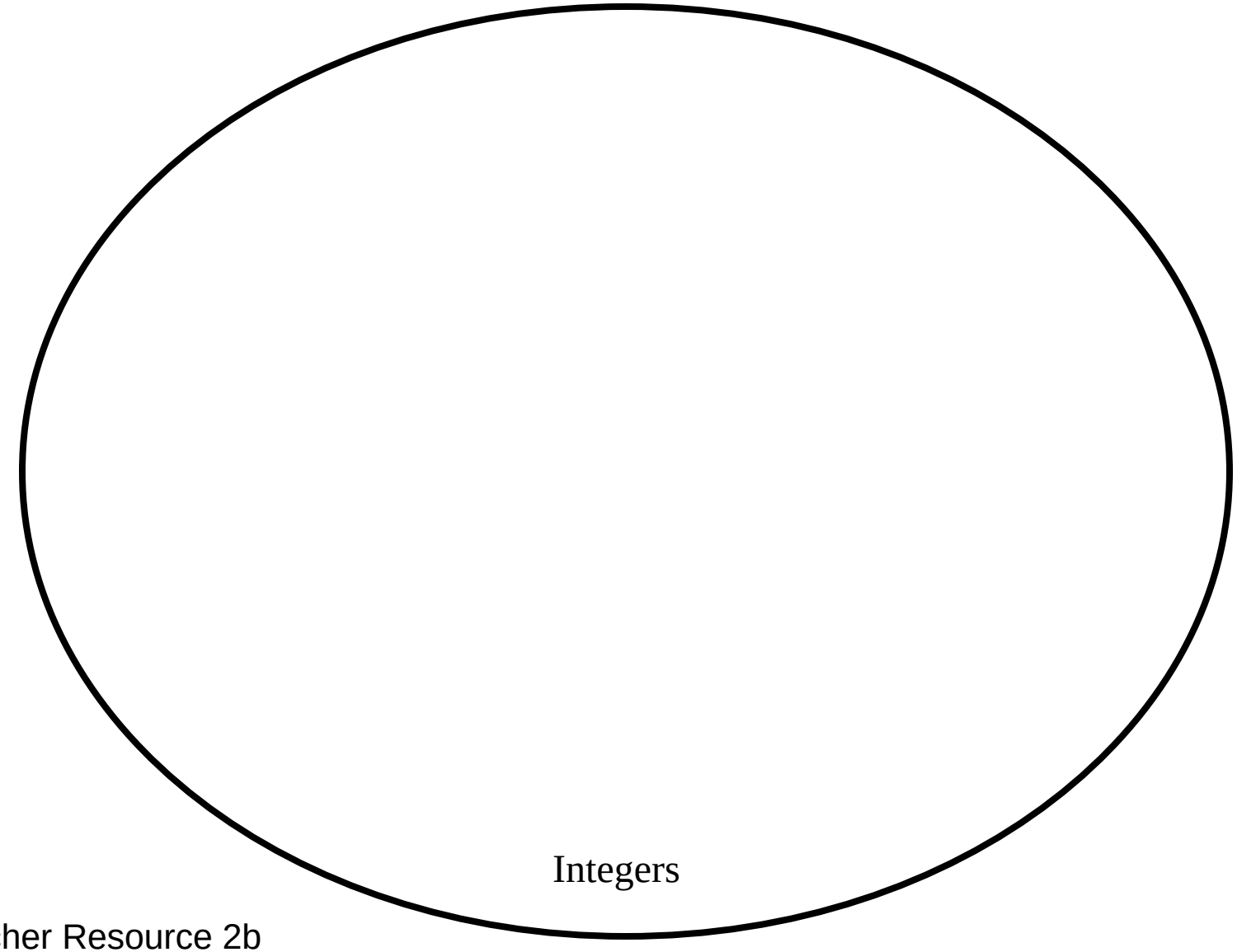
Lowest Level

Garage

Parking

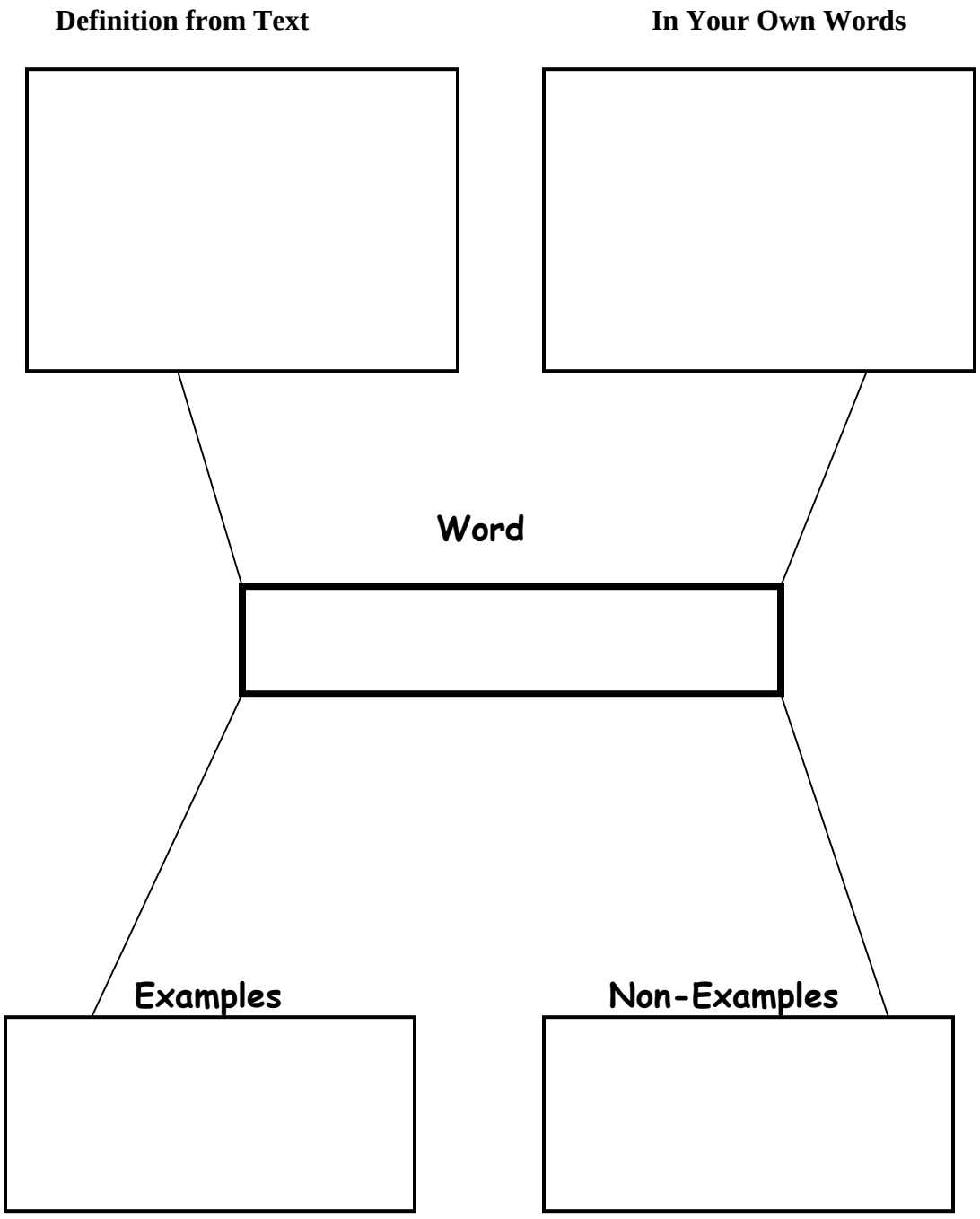


Teacher Resource 2a

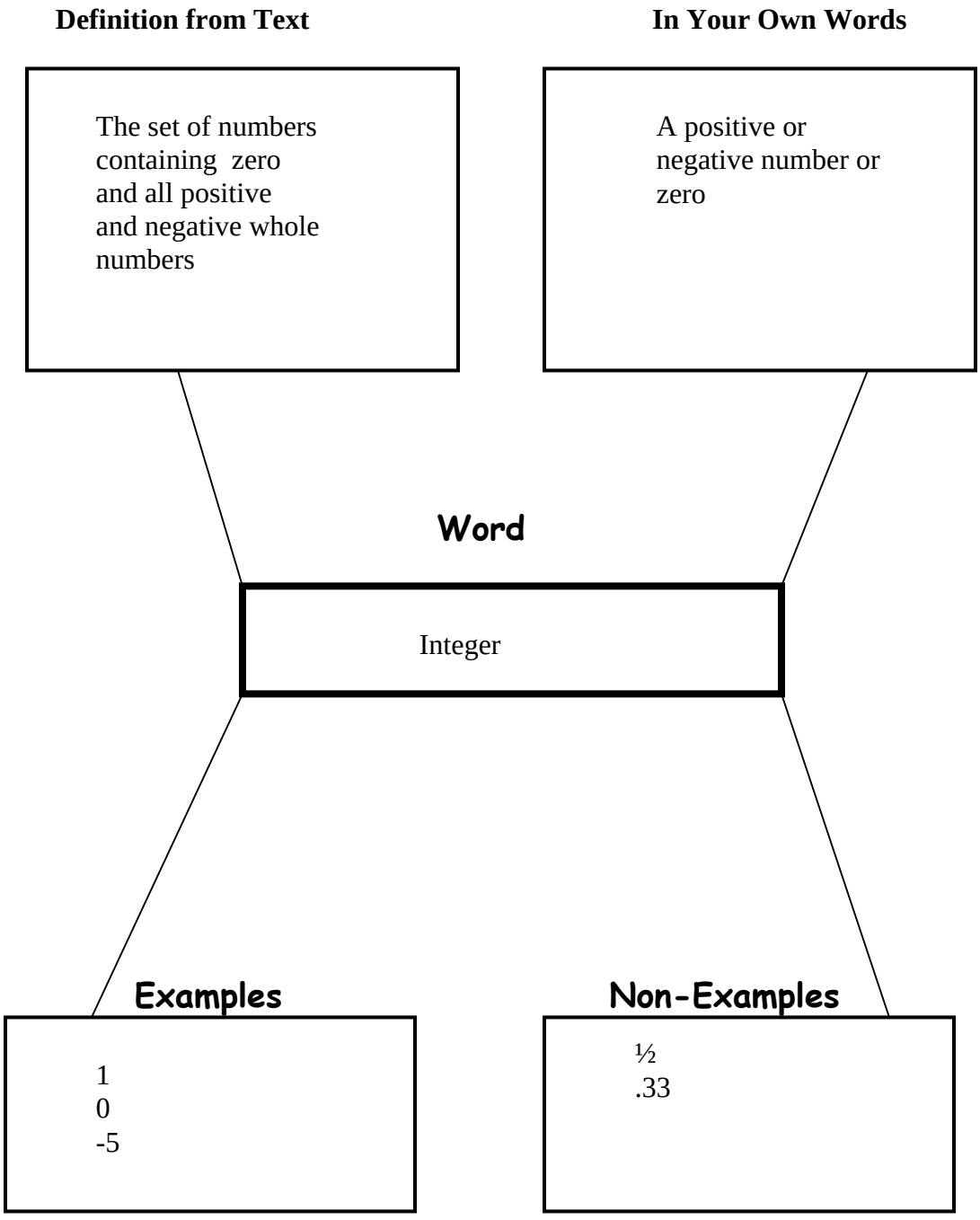


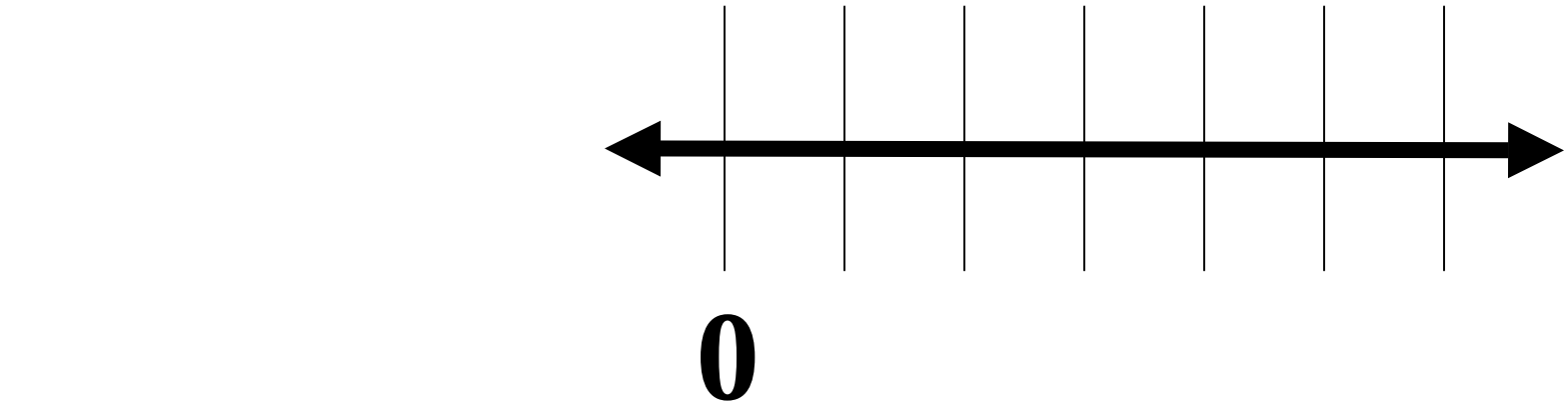
Teacher Resource 2b

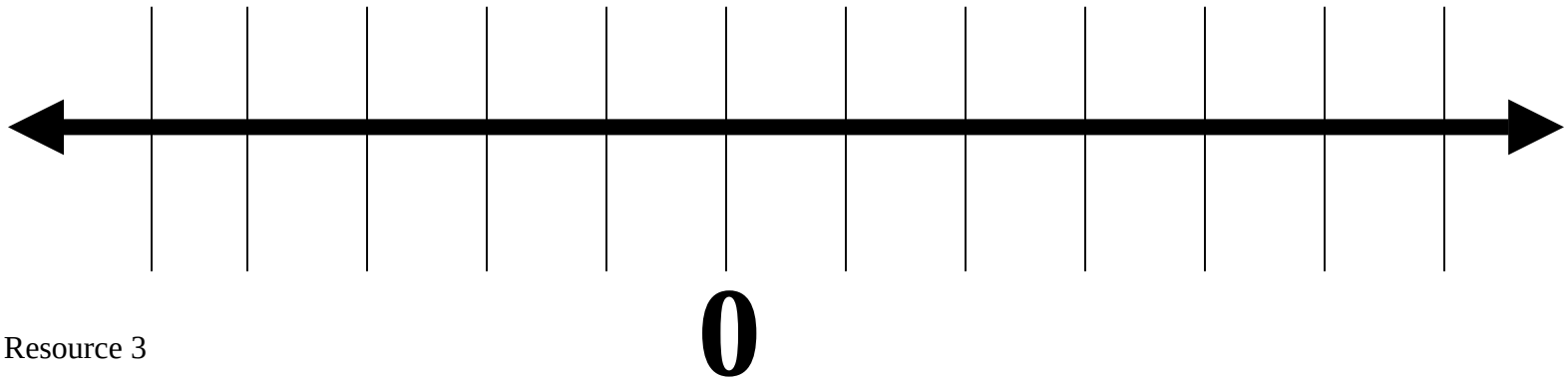
MATH VOCABULARY



MATH VOCABULARY (sample)







Teacher Resource 3

Rolling For Zero

Materials:
Number line
2 markers per pair
1 cube labeled +, +, –, –, w, w,
1 cube labeled 1, 2, 3, 4, 5, w

Directions:
Players put their markers on 0 on the number line.

First player rolls two cubes and moves his or her marker on the number line as indicated by the two cubes. (ex. –4 means move 4 spaces in the negative direction).

If a "W" is rolled on the number cube, it is wild and the player can choose any number from 1 to 5.

If a "W" appears on the operation cube, the player can choose – or +.

Players alternate taking turns.

The player who returns to 0 first is the winner.

Name _____ Date _____

Is this number an integer ?

Directions: Sort the following list of numbers by placing them in the correct box below.

2	-4	0
½	.045	27
-3	8	1

Not an Integer

Integers

Name _____ Date _____

Is this number an integer ?

Directions: Sort the following list of numbers by placing them in the correct box below.

2	-4	0
½	.045	27
-3	8	1

Not an Integer

½
.045

Integers

2
-4
0
27
-3
8
1

Human Counter Game

Materials needed:
5 white tees or jerseys
5 red tees or jerseys
A white board & marker for each student group

Ground Rules: A white jersey symbolizes positive numbers and a red jersey symbolizes negative numbers. A student wearing a white tee joined with a student plus a red student is representative of a zero pair.

Facilitation

1. Divide the students into groups of four
2. Each group is to select a writer.
3. Select 10 students collectively from amongst the groups to come to the front of the room.
4. Give five students a white colored jersey and five students the red jerseys
5. Model for the students how the game works. Explain to students that a red jersey represents a negative one (-1) and a white jersey represents (+1).
6. Select three students wearing white colored jerseys to stand in a line. Say to students that collectively they represent a positive three (+3). Add to the line two more students with white jerseys. Share with student that the total student grouping represents the expression (+3) + (+2). Ask students what is the integer that the group of five students represent? Answer: (+3) + (+2) = (+5)
7. Write the equation and integer answer on the front board.
8. Set the five students to the side and demonstrate to students how to create the number zero. Select a student with a white jersey and a student with a red jersey to stand in line next to each other. Explain to students this combination represents the number zero and is called a zero pair.
9. Now you are ready to have student groups attempt to provide the integer answer to what the combination of students presented represent. Select two red jersey students to stand in line initially. Next add one more red jersey student to the line. Ask the student groups to discuss briefly and write their agreed upon equation with integer answer on the group white board. The teacher should signal when all groups are to display their answer. Answer: (-2) + (-1) = (-3)
10. Write the correct equation and integer answer on the board
11. Set all lined student to the side.
12. Select two white jersey students to stand in a line. Next select three red jersey students to stand in the line. Guide groups to the answer by calling seated students to the front of the room and asking them : Are there any zero pairs contained within this student grouping? Instruct the student to remove from the line any two students that make a zero pair. Ask the groups to discuss and write the representative equation and integer answer on their group white board for display. Answer: (+2) + (-3) = (-1)

Human Counter Game continued

13. Write the correct equation and integer answer on the board. Set all lined students to the side.
14. Select four red jersey students to stand in line. Next select four white jersey students. Ask a seated student to come to the front of the class and remove all zero pairs from the line. Ask the groups to discuss and write the representative equation and integer answer on their group white board for display. Answer: (-4) + (4) = 0
15. Continue this game using at least two more examples. Here are some to choose from: (-2) +(+ 4)= (+2), (+ 5) + (-4) = 1, (+4) + (-3) = (+1)

Modeling Addition and Subtraction of Integers

5+(-1)	-3+3	-2+(-1)
-8-(-10)	1- 0	8-(-2)

GET A LINE ON ADDING AND SUBTRACTING INTEGERS

Find the sum or difference:

1. 7 – (-3) =
2. -3 +(-2) =
3. –5 + 4 =
4. 10 + (-3) =
5. 3 + (-3) =
6. 7 - (-2) =
7. –6 + 2 =
8. 1 + (-3) =
9. –4 – (2) =
10. -4 + (-3) =

GET A LINE ON ADDING AND SUBTRACTING INTEGERS

(Answer sheet)

Find the sum or difference:

1. $7 - (-3) = 10$
2. $-3 + (-2) = -5$
3. $-5 + 4 = -1$
4. $10 + (-3) = 7$
5. $3 + (-3) = 0$
6. $7 - (-2) = 9$
7. $-6 + 2 = -4$
8. $1 + (-3) = -2$
9. $-4 - 2 = -6$
10. $-4 + (-3) = -7$

Investigating Integer Multiplication

Which counter would you use to represent the answer to the products below? Place your choice of counter in the corresponding box below.

1 • 1 =	**-1 • 1 =**
1 • -1 =	**-1 • -1 =**

A. Do you notice any patterns or relationships between the problems and the counters you've selected ? Explain.

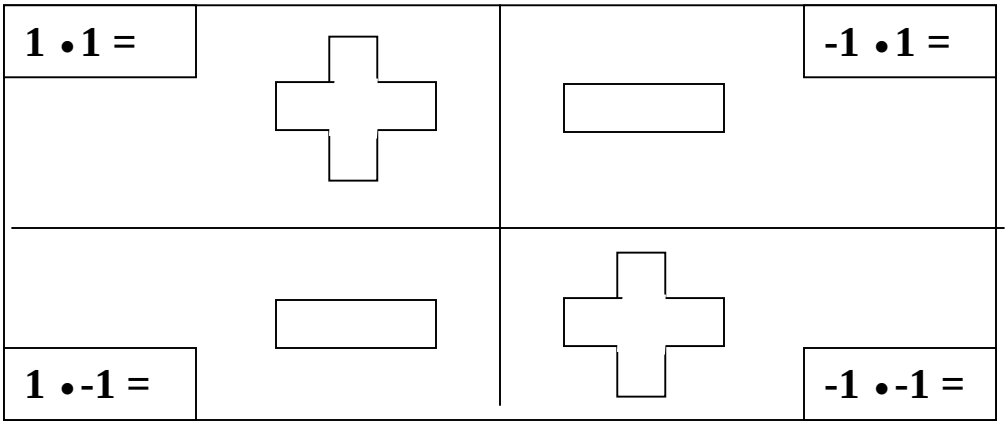
B. What multiplication rules might your derive for multiplying integers taking into consideration the counter choices that you've made above? List your rules below.

Testing your rule

List three integer multiplication problems below. Use your rules devised in part B above to derive the answer. Check the accuracy of your answer using a calculator.

Investigating Integer Multiplication

Which counter would you use to represent the answer to the products below? Place your choice of counter in the corresponding box below.



C. Do you notice any patterns or relationships between the problems and the counters you've selected ? Explain.
Answers will vary

D. What multiplication rules might your derive for multiplying integers taking into consideration the counter choices that you've made above? List your rules below.
Answers will vary

Testing your rule
List three integer multiplication problems below. Use your rules devised in part B above to derive the answer. Check the accuracy of your answer using a calculator.
Answers will vary

Practice: Multiplying and Dividing Integers

Please complete the following problems:

$4 \bullet 2 =$ _____ $-4 \bullet 2 =$ _____

$(-3) \bullet (-8) =$ _____ $5 \bullet (-7) =$ _____

$(-2) \bullet (10) =$ _____ $0 \bullet (-3) =$ _____

$5 \bullet (-1) =$ _____ $(-2) \bullet 8 =$ _____

$6 \div 3 =$ _____ $-8 \div 4 =$ _____

$(-12) \div (-3) =$ _____ $18 \div (-6) =$ _____

$(-10) \div (5) =$ _____ $0 \div (-7) =$ _____

$9 \div (-1) =$ _____ $(-24) \div 8 =$ _____

Practice: Multiplying and Dividing Integers

Please complete the following problems:
(answer sheet)

$4 \bullet 2 =$ _____8_____ $\quad -4 \bullet 2 =$ _____-8____

$(-3) \bullet (-8) =$ ____24____ $\quad 5 \bullet (-7) =$ ____-35___

$(-2) \bullet (10) =$ ___-20____ $\quad 0 \bullet (-3) =$ _____0____

$5 \bullet (-1) =$ ____-5____ $\quad (-2) \bullet 8 =$ ___-16_____

$6 \div 3 =$ _____2_____ $\quad -8 \div 4 =$ _____-2_____

$(-12) \div (-3) =$ ____4____ $\quad 18 \div (-6) =$ ____3_____

$(-10) \div (5) =$ ____-2____ $\quad 0 \div (-7) =$ _____0____

$9 \div (-1) =$ ____-9____ $\quad (-24) \div 8 =$ _____-3___

Exit Ticket

Complete the problems below.

$4 \bullet 2 =$ _____ $-4(3 + 2) =$ _____

$12 \div 3 =$ _____ $-28 \div 4 =$ _____

$(-5) \bullet 2 \bullet (-4) =$ _____ $2 \bullet 0 \bullet (-3) =$ _____

$5 \bullet (-1) \bullet 7 =$ _____ $-(3 + (-7)) =$ _____

$-36 \div 3 =$ _____ $-8 \div (-4) =$ _____

Exit Ticket (answers)

$4 \bullet 2 =$ ___8_____

$12 \div 3 =$ ___4_____

$(-5) \bullet 2 \bullet (-4) =$ __4___

$5 \bullet (-1) \bullet 7 =$ __-35__

$-36 \div 3 =$ ___-12____

$-4(3 + 2) =$ ___-16____

$-28 \div 4 =$ ____-7_____

$2 \bullet 0 \bullet (-3) =$ ___0____

$-(3 + (-7)) =$ ____4___

$-8 \div -4 =$ _____2_____

INTEGER RELAY ***** ******

Direction: Work each problem in each set. Carry the answer from each problem to the next problem listed in the set. Match the final answer obtained in each set to a letter at the bottom of the page. Place the letters obtained in set order in the row at the bottom of the page.

Set 1: Add

2 + (-8) = ?
? + (-3) = ?
? + (12) = ?
? + (-8) = ?

Set 2: Subtract

5 – 9 = ?
? – 6 = ?
? – (-7) = ?
? – (-3) = ?

Set 3: Multiply

(-4) x (-5) = ?
? x (-1)÷4 = ?
? x (3) = ?
? x (-1) ÷3 = ?

Set 4: Divide

25 ÷ (-5) = ?
? ÷ (2) =
?÷ (-10) =
(4) ÷ ? =

Set 5: Multiply

6 x (-2) = ?
? x 3 = ?
? x (1)÷9 = ?
? x (-2) = ?

Set 6: Mixture

3 x 3 = ?
? ÷ 3 = ?
? x (-4) =?
? ÷ 12 = -1

Set 7: Mixture

3 + 9 = ?
12 + (-9) = ?
3 – (-5) = ?
? – (-3) = ?

Set 8: Mixture

8 – 6 = ?
2 - 3+1 = ?
? – 4 = ?
? + 10 -8 =?

Set 9: Mixture

16 ÷ (-8) = ?
(-2) x 11 = ?
(-22)÷ (-11) = ?
2 x (-15)÷10 = ?

A	B	C	D	E	F	G	H	I	J	K
4	6	.5	3	5	-4	-5	-3	2	11	7

L	M	N	O	P	Q	R	S	T	U	V
-7	15	13	-2	-14	9	0	1	8	-6	-1

Set Numbers

1	2	3	4	5	6	7	8	9

Write your letter answers here !

Integer Relay

Answer Guide

Set 1: 2 + (-8) = -6
-6 + (-3) = -9
-9 + 12 = 3
3 + (-8) = -5

Set 2: 5 – 9 = (-4)
(-4) – 6 = (-10)
(-10) – (-7) = (-3)
(-3) _ (-3) = 0

Set 3: (-4) x (-5) = 10
20 ÷ (-4) = -5
(-5) x 3 = (-15)
(-15) ÷(-3) = 5

Set 4: 25 ÷ (-5) = (-5)
(-5)÷(2) = (-10)
(-10)÷ (-10) = 1
4 ÷(1) = 4

Set 5: 6 x (-2) = (-12)
(-12) x 3 = (-36)
(-36) x (1)÷(9) = (-4)
(-4) x (-2) = 8

Set 6: 3 x 2 = 6
6 ÷ 3 = 2
2x (-6) = (-12)
(-12)÷12 = -1

Set 7: 3 + 9 = 12
12 + (-9) = 3
3 – (-5) = 8
8 – (-3) = 11

Set 8: 8 – (-3) = 11
8 – 6 = 2
2 - 3 + 1 =0
0 – 4 = (-4)

Set 9: 16÷(-8) = (-2)
(-2) x 11 = (-22)
(-22)÷(-11)= 2
2 x(-15)÷10=6

Final Word Answer: GREAT JOB