

4A Multiplying Integers.doc

Prealgebra

Name: _____ Due Date: _____

WHY: You've probably encountered negative numbers in situations as diverse as banking, science class, and telling temperature. Being able to compute with negative numbers is one of the skills prealgebra students need to master in order to be ready for algebra.

LEARNING OBJECTIVES:

- 1) Accurately multiply and divide signed integers without a calculator.
- 2) Interpret multiplication and division with integers in the context of word problems and graphs.

GROUP ACTIVITY:

- 1) Fill in this multiplication table using the patterns going to the left in each row and up each column.

						-5				
						-4				
						-3				
						-2				
						-1				
						0				
-5	-4	-3	-2	-1	0	1	2	3	4	5
						2	4	6	8	10
						3	6	9	12	15
						4	8	12	16	20
						5	10	15	20	25

- 2) Using the multiplication table, complete the following rules:

positive \times positive = _____

positive \times negative = _____

negative \times positive = _____

negative \times negative = _____

- 3) Explain how to use the table to divide -12 by -3 .

- 4) Explain how to use the table to divide 15 by -5 .

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5) What are the rules above to find rules for division?

positive \div positive = _____

positive \div negative = _____

negative \div positive = _____

negative \div negative = _____

6) Notice that the rules are the same for multiplication and division. Another way to remember these rules is the “neighbor model.” In this model, good is positive and bad is negative; moving in is positive and moving out is negative.

If a good (positive) neighbor moves in (positive), that’s _____

If a good (positive) neighbor moves out (negative), that’s _____

If a bad (negative) neighbor moves in (positive), that’s _____

If a bad (negative) neighbor moves out (negative), that’s _____

7) If d measures the number of miles east of Jefferson City, MO, then explain the meaning of

a) $d = 300$

b) $d = -180$

c) $d = 0$

8) If t measures the number of minutes after a fireworks show begins in Jefferson City, then explain the meaning of

a) $t = 60$

b) $t = -90$

c) $t = 0$

9) If r measures the rate of travel in miles per minute, then explain the meaning of

a) $r = 12$

b) $r = -5$

10) Interpret the meaning of the equation $d = r \times t$.

11) Solve $d = r \times t$ for d . Interpret the meaning of your solution.

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12) Planes #1-8 were all traveling across the country, and each plane was directly over a fireworks show in Jefferson city ($d = 0$) when the show began ($t = 0$). Write and evaluate an expression involving integers for the following, graph the situation, and then interpret your answer:

- a) Plane #1 was 132 miles east of Jefferson city 12 minutes before the fireworks show began. How fast was the plane traveling?

Plane #2 was 132 miles east of Jefferson city 12 minutes after the fireworks show began. How fast was the plane traveling?

Plane #3 was 132 miles west of Jefferson city 12 minutes before the fireworks show began. How fast was the plane traveling?

Plane #4 was 132 miles west of Jefferson city 12 minutes after the fireworks show began. How fast was the plane traveling?

- b) Denver is 800 miles west of Jefferson City. Columbus, OH is 1500 miles east of Denver. Where is Columbus when compared to Jefferson City?

- c) Plane # 5 was traveling east at 9 miles per minute. Where was the plane 120 minutes before the show began?

Plane # 6 was traveling east at 9 miles per minute. Where was the plane 120 minutes after the show began?

Plane # 7 was traveling west at 9 miles per minute. Where was the plane 120 minutes before the show began?

Plane # 8 was traveling west at 9 miles per minute. Where was the plane 120 minutes after the show began?

