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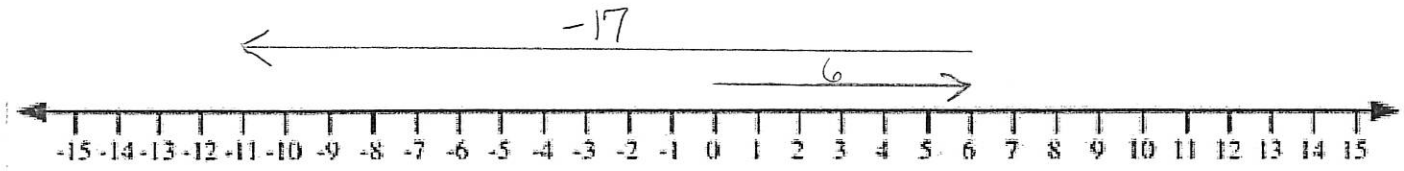
Mid Module 2 Study Guide

Directions: Show all work for full credit.

1. Raphael used a number line to add. He started counting at 6 and then he counted until he was on the number -11 on the number line.
   a. If Raphael is modeling addition, what number did he add to 6? Use the number line below to model your answer.



He added $\boxed{-17}$ to 6 to get -11.

$6 + (-17) = -11$

   b. Write a real-world story problem that would fit this situation.

The temperature was 6° outside and then it dropped 17°. It is now -11°.

OR I hiked 6 feet above sea level. Then I descended 17 ft. I am now 11 feet below where I began.

   c. Use absolute value to express the ***distance*** between 6 and -11.
   Must write and use the distance formula

$$|p-q| = |6-(-11)| = |6+11| = |17| = \boxed{17}$$

OR

$$|-11-6| = |-17| = \boxed{17}$$

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2. What value of x will make the equation a true statement? Explain how you arrived at your solution.

$$-\frac{5}{9}+\frac{9}{5}+x=0$$

$\frac{-5}{9}+\frac{9}{5}=\frac{-25}{45}+\frac{81}{45}=\frac{56}{45}=1\frac{11}{45}$

X would have to be $-1\ 11/45$ because that is the additive inverse of $1\ 11/45$. Additive inverses add to equal zero.

$1\ 11/45+(-1\ 11/45)=0$

3. Every month, Mr. Williams pays his satellite radio subscription through automatic monthly payments (withdrawals) from his savings account. He pays the same amount on his subscription each month. At the end of the year, his savings account balance changed by -$690 from payments made on his radio subscription.

   a. What is the ***change in*** Mr. Williams' savings account balance each month due to his radio subscription?

$$12\overline{)690.0}\quad 57.5$$
$$-60$$
$$90$$
$$-84$$
$$60$$

-$57.50 OR His balance decreases by $57.50 each month

   b. Describe the total change to Mr. Williams' savings account balance after making six monthly payments on his radio subscription. **Model your answer using a number sentence.**

$(-57.50)(6)=-\$345$

$$\begin{array}{r} {}^{4}{}^{3} \\ 57.50 \\ \times\quad 6 \\ \hline 345.00 \end{array}$$

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4. Miranda and Courtney are playing the Integer Card Game. The cards in Miranda's hand are shown below.

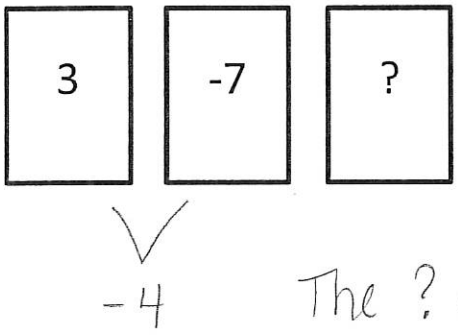
Miranda's Hand

5, 9, -2, -11

a. What is the total score of Miranda's hand? Support your answer by showing your work.

$5+9+(-2)+(-11) = 14+(-13) = \boxed{1}$

b. Complete Miranda's new hand to make her total score equal zero. What must be the value of the ? card? Explain how you arrived at your answer.



The ? card must be 4 because the 3 and -7 combine to equal -4. These two numbers, 4 and -4 are additive inverses and they add to equal zero.

$-4+4=0$

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5. The table below shows the temperature changes Monday morning in Minneapolis, Minnesota over a 3-hour period after a cold front came through.

   a. If the beginning temperature was -8°F at 7:00 a.m., what was the temperature at 10:00 a.m.?

Change in Temperature	
7:00 a.m. – 8:00 a.m.	-5°F
8:00 a.m. – 9:00 a.m.	-5°F
9:00 a.m. – 10:00 a.m.	-5°F

$-8+(-5)=-13$
$-13+(-5)=-18$
$-18+(-5)=-23$

$-23°F$

   b. In answering part (b), Savannah and Billy used different methods. Savannah said her method involved multiplication, while Billy said he did not use multiplication. Both students arrived at the correct answer. How is this possible? Explain.

Since multiplication is repeated addition, Savannah could represent the change in temperature as $(-5)(3)=-15$, while Billy could write $(-5)+(-5)+(-5)=-15$. Both arrive at the same answer.

6. The quotient of two negative numbers is always: (Provide examples to support your answer)

   a. Zero
   b. One
   c. Negative
   d. Positive

Examples:

$\frac{-3}{-3}=1$ $\frac{-18}{-2}=9$

7. Which expressions are equivalent to $-3-(7.5+4)$?
Select **ALL** that apply.

   a. $(7.5+4)-3$
   b. $-(7.5+4)-3$
   c. $-(7.5+4)+3$
   d. $-3-(4+7.5)$
   e. $-(3-7.5)+4$
   f. $-3+(-7.5-4)$
   g. $-3+(-7.5+4)$

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8. Which expressions have products that are positive?
   Select **ALL** that apply.

   a. (-5)(0.2)(-9)
   b. $\left(\frac{2}{3}\right)\left(\frac{3}{2}\right)\left(-\frac{1}{2}\right)$
   c. (6)(-3)(8)(-7)
   d. $\left(-4\frac{1}{3}\right)\left(\frac{1}{-4}\right)\left(-5\frac{1}{2}\right)\left(\frac{-7}{9}\right)$
   e. $\left(\frac{5}{6}\right)(-10)\left(3\frac{4}{5}\right)(2)$
   f. (-1.2)(-3.5)(2.7)(-0.8)