Name_____ Date _____

Mr. Tallman Math 7-8A

Do Now

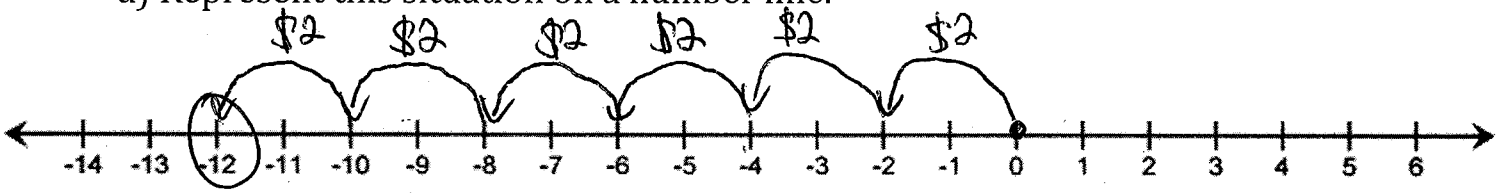
Evaluate the following:

1) $6(5) = 30$	2) $7 \cdot 2 = 14$	3) $7 \cdot (9 + (-2))$ $7 \cdot 7$ (49)
4) $\frac{48}{6} = 8$	5) $\frac{5 \cdot 10}{2} = \frac{50}{2} = 25$	6) $\frac{17+3}{20} = \frac{20}{20} = 1$

Lesson #6 – Multiplying and Dividing Integers

Example 1) Lisa owes \$2 to 6 friends.

a) Represent this situation on a number line.



b) Represent this situation by writing an **addition** equation.

$(-2) + (-2) + (-2) + (-2) + (-2) + (-2) = -\$12$

c) Represent this same situation by writing a **multiplication** equation.

$-2(6) = -\$12$

d) Represent this same situation by writing a division equation.

$\frac{-\$12}{6} = \$-2$

Rules for Multiplying and Dividing Integers

- If the signs are the same: Multiply or divide the numbers, & the product / quotient is positive.
- If the signs are different: Multiply or divide the numbers, & the product/quotient is negative.

Example 1) Find the product or quotient.

A) $6 \cdot 4 = 24$	B) $-5(-6) = 30$	C) $4(-3) = -12$	D) $-7 \cdot 4 = -28$
E) $15 \div 3 = 5$	F) $-18 \div (-6) =$ 3	G) $75 \div (-25) =$ -3	H) $\frac{-54}{6} = -9$

We can use our multiplication rule to solve exponents.

Example 2) Solve each exponent.

A) $(-2)^3$ $(-2)(-2)(-2)$ $4(-2) = -8$	B) -5^2 $-(5)(5)$ -25	C) $(-2)^3 \cdot (-6)$ $(-2)(-2)(-2)(-6)$ $-8(-6)$ 48

Example 3) A manatee population decreases by 15 manatees each year for 3 years. Find the change in the manatee population after three years. Show work below.

$-15(3) = -45$ After 3 years, the population decreases by 45.

Example 4) Evaluate each expression below when $a = -18$ and $b = -6$

A) $a \div b$ $-18 \div -6$ 3	B) $\frac{(a+6)}{3}$ $\frac{(-18+6)}{3} = \frac{-3}{3} = -1$

Now, You Try! Evaluate the following.

4) $12 \cdot (-2)$ -24	5) $-7 \cdot (-8)$ 56	6) $-32 \div (-4)$ 8
7) $-10(-3)(-7)$ $30(-7)$ -210	8) $\frac{-49}{7} = -7$	9) $\frac{21}{-3} = -7$

10) You lose 5 points for every wrong answer in a trivia game. What represents the change in your points after answering 8 questions wrong? Show work below.

$-5(8) = -40$ A loss of 40 points.

11) Evaluate the following when $x = -32$ and $y = 8$

A) $\frac{x}{y}$ $\frac{-32}{8} = (-4)$	B) $\frac{(x+16)}{y}$ $\frac{-32+16}{8} = \frac{-16}{8} = (-2)$

Challenge Problems

Evaluate the following. (HINT: Use PEMDAS)

12) $-63 \div (-7) + 6$ $9+6$ (15)	13) $-5 - 12 \div 3$ $-5-4$ $-5+(-4)$ (-9)	14) $-8 \cdot 7 + 33 \div (-11)$ $-56+33\div(-11)$ $-56-3 \Rightarrow -56+(-3)$ (-59)

15) Evaluate $\frac{b^2}{a} + 4$ when $a = -18$ and $b = -6$

$\frac{(-6)^2}{-18} + 4$ $\frac{36}{-18} + 4$ $-2+4$ (2)

16) You measure the height of the tides using the support beams of a pier. The height of the tide at 2 PM was 59 inches. The height of the tide at 8 PM was 8 inches. What is the mean (average) hourly change in height?

$\frac{8-59}{8-2} = \frac{-51}{6} \approx -8.5$ The tide went down at a rate of 8.5 inches per hour.