Algebra I

Lesson 1.3 – Multiplying and Dividing Real Numbers

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When multiplying or dividing two numbers you need to keep track of the signs to determine whether the result is negative or positive. Remember the following sign rules:

$(+) \times (+) = +$	$(+) \div (+) = +$
$(-) \times (+) = -$ OR $(+) \times (-) = -$	$(-) \div (+) = -$ OR $(+) \div (-) = -$
$(-) \times (-) = +$	$(-) \div (-) = +$

Observation: Same signs $(+\&+ \; or \; -\&-)$ give a positive answer. Mixed signs $(+\&-)$ give a negative answer.

Simplify:

$3 \cdot 4$ $35 \div 5$ $-11(-4)$ $-6x \;\; for \;\; x = 7$

$-\frac{3}{4} \div -9$ $\frac{3}{10} \div \left(-\frac{6}{5}\right)$ $-\frac{5}{6} \div 1\frac{2}{3}$ $4 \cdot \frac{1}{4}$

Woa! What is the deal with the last problem? The relationship between 4 and ¼ is special.

- Two numbers are **reciprocals** if their product is 1.
- A number and its reciprocal are called **multiplicative inverses.**
- 0 divided by a number equals zero, while a number divided by 0 is <u>undefined.</u>

$\frac{2}{3} \cdot \frac{3}{2}$ $-\frac{5}{4}\left(-\frac{4}{5}\right)$ $12 \div 0$ $0 \div 12$

What is the reciprocal of **0**?

No number can be multiplied by 0 to get the product of 1. ∴ 0 has no reciprocal. **Division by 0 is not possible, it is UNDEFINED!!!**

$5.78 \div 0$ $-154{,}986 \div 0$ $0 \div 14$ $0 \div \left(-8\frac{1}{2}\right)$

On vacation, the James family drove for 4 hours non-stop before stopping for lunch. Mr. James drove at a constant speed of 64 miles per hour. How many miles did they travel before stopping for lunch? *Include the units when you are solving this!!*