



MATH NEWS



Grade 5, Module 4, Topic H

5th Grade Math

Module 4: Multiplication and Division of Fractions and Decimal Fractions

Math Parent Letter

This document is created to give parents and students an understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Grade 5 Module 4 of Eureka Math (Engage New York) covers Multiplication and Division of Fractions and Decimal Fractions. This newsletter will discuss Module 4, Topic H. In this topic students will interpret and evaluate numerical expressions involving fractions and decimal fractions as well as create and solve word problems.

Topic H: Interpretation of Numerical Expressions

Words to know:

- evaluate
- numerical expression
- equivalent
- sum
- product
- expression
- parentheses
- scaling
- difference
- quotient

Things to Remember!

- **Expression** – a group of numbers and symbols that shows a mathematical relationship
Example: $\frac{1}{3} + \frac{3}{4} + \frac{2}{3}$
- **Numerical Expression** - A mathematical phrase involving only numbers and one or more operational symbol
Example: $\frac{2}{5} \times (6 + 14)$
- **Evaluate** – to find the value of an expression
- **Parentheses** – the grouping symbol (); used to group part of an expression

OBJECTIVES OF TOPIC H

- Interpret and evaluate numerical expressions including the language of scaling and fraction division.
- Create story contexts for numerical expressions and tape diagrams, and solve word problems.

Focus Area– Topic H

Module 4: Multiplication and Division of Fractions and Decimal Fractions

Write word form expressions numerically

Example 1: *Half the sum of $\frac{3}{5}$ and $1\frac{1}{2}$*

Possible Responses: $\frac{1}{2} \times (\frac{3}{5} + 1\frac{1}{2})$ or $(\frac{3}{5} + 1\frac{1}{2}) \div 2$

Example 2: *3 times as much as the quotient of 1.2 and 0.4*

Possible Responses: $3 \times (1.2 \div 0.4)$ or $(1.2 \div 0.4) \times 3$

Practice Problem: Which expression is equivalent to “the sum of 5 and 3 divided by $\frac{1}{4}$?”

- A. $\frac{5+3}{4}$
- B. $5 + (3 \div \frac{1}{4})$
- C. $(5 + 3) \div \frac{1}{4}$
- D. $\frac{1}{4} \div (5 + 3)$

Correct answer: C

Some will pick A but this expression represents “the sum of 5 and 3 divided by 4.”

Application Problem:

Susie picked 12 cucumbers from her garden. She cut up 2 of them for a salad and then gave $\frac{2}{5}$ to her neighbor. Write an expression that tells how many cucumbers she gave to her neighbor.

Expression: $\frac{2}{5} \times (12 - 2)$



Write a numerical expression in word form

Example 1: $(\frac{1}{4} + 1.25) \div \frac{1}{2}$

The sum of $\frac{1}{4}$ and 1.25 divided by $\frac{1}{2}$

Example 2: $\frac{5}{6} - (\frac{1}{5} \times 0.2)$

The difference between $\frac{5}{6}$ and the product of $\frac{1}{5}$ and 0.2

Evaluate the following expressions:

Students should recognize that when evaluating expressions that contain grouping symbols, any operation inside grouping symbols should be performed before operations outside of grouping symbols.

Example 1: $(7 - 5) \div \frac{1}{3}$
 $= 2 \div \frac{1}{3}$
 $= 6$

Example 2: $\frac{5}{4} \times (3 \times \frac{1}{2})$
 $= \frac{5}{4} \times \frac{3}{2}$
 $= \frac{15}{8} = 1\frac{7}{8}$

Example 3: 4 times as much as the quotient of 1.8 and 0.3
 $4 \times (1.8 \div 0.3)$

$= 4 \times (\frac{1.8}{0.3} \times \frac{10}{10})$
 $= 4 \times \frac{18}{3}$
 $= 4 \times 6$
 $= 24$

Problem :

Without evaluating, compare the first expression to the second expression. Explain your reasoning.

$(1.25 + \frac{3}{4}) \times \frac{3}{2}$ $\frac{2}{3} \times (1.25 + \frac{3}{4})$

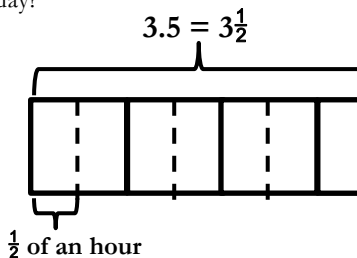
In both expressions you are finding the sum of the same two numbers. In the first expression the sum is being multiplied by a fraction greater than 1 which would result in an answer greater than the sum of the two numbers. In the second expression the sum is being multiplied by a fraction less than 1 which would result in an answer less than the sum of the two numbers. Therefore first expression will be greater than the second expression.

$(1.25 + \frac{3}{4}) \times \frac{3}{2} > \frac{2}{3} \times (1.25 + \frac{3}{4})$

Problem Solving:

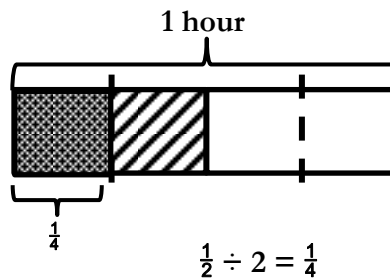
Luke has 3.5 hours left in his workday as a car mechanic. He needs $\frac{1}{2}$ of an hour to complete one oil change.

a. How many oil changes can Luke complete during the rest of his workday?



Luke can complete 7 oil changes during the 3.5 hours.

b. Luke can complete two car inspections in the same amount of time it takes him to complete one oil change. How long does it take him to complete one car inspection?



Luke can complete one car inspection in $\frac{1}{4}$ hour.

c. If he only completes car inspections in the rest of his workday, how many can he complete?

$7 \times 2 = 14$

Since Luke can complete 2 car inspections in the same amount of time it takes him to complete one oil change, he can complete 14 inspections (twice as many as 7) in 3.5 hours.

Create a story context for the following expression:

$\frac{1}{3} \times (\$25 - \$5.80)$

Kaitlyn received \$25 for her birthday from her grandmother. After spending \$5.80 on stickers, she spent $\frac{1}{3}$ of the remaining money on a book. How much did she spend on the book?

$\begin{array}{r} 14 \\ \cancel{\$25.00} \\ - 5.80 \\ \hline 19.20 \end{array}$	$\frac{1}{3} \times \$19.20$ $= \frac{19.20}{3}$ $= \$6.40$	$\begin{array}{r} \$ 6.40 \\ 3 \overline{) \$19.20} \\ \underline{18} \\ 12 \\ \underline{12} \\ 00 \\ \underline{0} \end{array}$
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Kaitlyn spent \$6.40 on the book.