



MATH NEWS

Grade 5 | Module 4 | Topic C | Mult. and Div. of Fractions & Decimal Fractions

Welcome

This document is created to give parents and students a better understanding of the math concepts found in the Eureka Math (© 2013 Common Core, Inc.) that is also posted in the Engage New York material 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 address multiplication and division of fractions and decimal fractions.

Objectives

- Relate fractions as division to fraction of a set
- Multiply any whole number by a fraction using tape diagrams
- Relate fraction of a set to the repeated addition interpretation of fraction multiplication
- Find a fraction of a measurement, and solve word problems

Words to Know

- Product
- Tape Diagram
- Array
- Numerator
- Denominator
- Commutative Property

Important Information

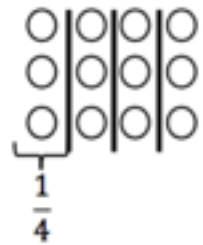
Things to Remember

Product: The answer to a multiplication problem

Array: To arrange or display

Commutative Property: Property that allows you to multiply factors in any order ($1/2 \times 3$ is the same thing as $3 \times 1/2$)

- To find $\frac{1}{4}$ of 12, make an array with 12 circles.



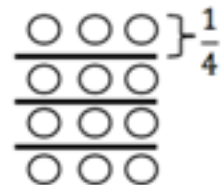
- Use lines to divide the array into 4 equal groups.

- Write a division sentence to represent what was done.

$$16 \div 4 = 4 \quad \text{or} \quad \frac{16}{4} = 4$$

- Each group is $\frac{1}{4}$ of all the circles.

- So $\frac{1}{4}$ of 12 = 3



Focus Area - Example Problem

Find $\frac{4}{5}$ of 15. Draw a set/array to show your thinking.

$$\frac{\text{○○○}}{\text{○○○}} \quad \left. \vphantom{\frac{\text{○○○}}{\text{○○○}}} \right\} \frac{1}{5} \text{ of } 15 = 3$$

$$\frac{\text{○○○}}{\text{○○○}} \quad \frac{2}{5} \text{ of } 15 = 6 \text{ (2 groups of } \frac{1}{5} \text{ is } 3 + 3)$$

$$\frac{\text{○○○}}{\text{○○○}} \quad \frac{3}{5} \text{ of } 15 = 9 \text{ (3 groups of } \frac{1}{5} \text{ is } 3 + 3 + 3)$$

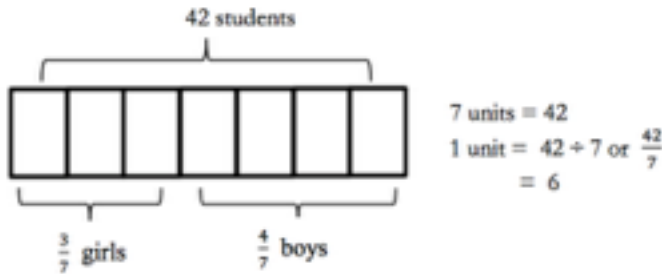
$$\frac{\text{○○○}}{\text{○○○}} \quad \frac{4}{5} \text{ of } 15 = 12 \text{ (4 groups of } \frac{1}{5} \text{ is } 3 + 3 + 3 + 3)$$

$$\frac{\text{○○○}}{\text{○○○}} \quad \frac{5}{5} \text{ of } 15 = 15 \text{ (5 groups of } \frac{1}{5} \text{ is } 3 + 3 + 3 + 3 + 3)$$

$$\frac{\text{○○○}}{\text{○○○}} \quad \frac{6}{5} \text{ of } 15 = 18 \text{ (6 groups of } \frac{1}{5} \text{ is } 3 + 3 + 3 + 3 + 3 + 3)$$

Application Problems

There are 42 students going on a field trip. Three-sevenths are girls. How many are boys? How many are girls? Solve using a **tape diagram**.



The **tape diagram** shows that three-sevenths of the 42 students are girls so the remaining pieces are boys which are 4 pieces or four-sevenths.

Each unit is equal to 6 students. The girls are 3 of the 7 units. To find how many girls are on the field trip we multiply 3 units by 6. 3 units = $6 \times 3 = 18$ students.

There is a total of 18 girls on the field trip.

Boys are 4 of the 7 units. To find how many boys are on the field trip we multiply 4 units by 6. 4 units = $6 \times 4 = 24$ students.

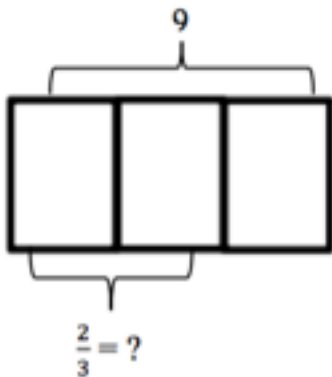
There is a total of 24 boys on the field trip.

Check: 18 girls + 24 boys = 42 total students.

$$\frac{2}{3} \times 9$$

Ways to interpret the above expression

1. 2 thirds of 9 ($\frac{2}{3} \times 9 = \frac{2}{3}$ of 9)



$$3 \text{ units} = 9$$

$$1 \text{ unit} = \frac{9}{3} \text{ or } 9 \div 3 = 3$$

$$2 \text{ units} = 2 \times 3 = 6$$

$$\text{Answer: } \frac{2}{3} \times 9 = 6$$

2. 9 copies of 2 thirds OR 2 thirds added together 9 times

$$\begin{aligned} &= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} \\ &= \frac{2+2+2+2+2+2+2+2+2}{3} \end{aligned}$$

$$= \frac{9 \times 2}{3}$$

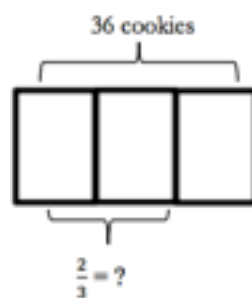
$$= \frac{18}{3}$$

ANSWER \longrightarrow = 6

Mrs. Collins baked 3 dozen cookies. Two-thirds of them were chocolate chip. How many chocolate chip cookies did she bake?

1 dozen is 12 cookies, so 3 dozen is 36 cookies (12×3)

$$\frac{2}{3} \text{ of } 36 \text{ cookies} = \text{ ______ } \text{ chocolate chip cookies}$$



Using **Tape Diagram**

$$3 \text{ units} = 36$$

$$1 \text{ unit} = \frac{36}{3} \text{ or } 36 \div 3 = 12 \text{ cookies}$$

$$2 \text{ units} = 2 \times 12 \text{ cookies} = 24 \text{ chocolate chip cookies}$$

Numerical Procedure:

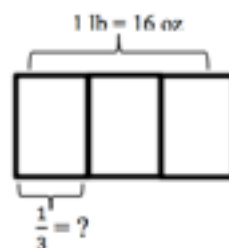
$$\frac{2}{3} \text{ of } 36 = \frac{2}{3} \times 36 = \frac{2 \times 36}{3} = \frac{72}{3} = 24$$

$$\frac{2}{3} \text{ of } 36 = \frac{2}{3} \times 36 = \frac{2 \times \overset{12}{\cancel{36}}}{\cancel{3}_1} = \frac{24}{1} = 24$$

Students look for a factor that is shared by the numerator and the denominator.

Solve the following problem using a tape diagram or an equation.

Tape Diagram



$$\frac{1}{3} \text{ lb} = \text{ ______ } \text{ oz}$$

lb - pound
oz - ounce (16 oz is equal to 1 lb)

$$3 \text{ units} = 16$$

$$1 \text{ unit} = \frac{16}{3} \text{ or } 16 \div 3$$

$$= 5 \frac{1}{3} \text{ oz}$$

Equation

$$\frac{1}{3} \text{ lb} = \frac{1}{3} \times 1 \text{ lb}$$

We know that 16 ounces is the same thing as 1 pound (lb), so we will rename the pound in our expression as ounces (oz).

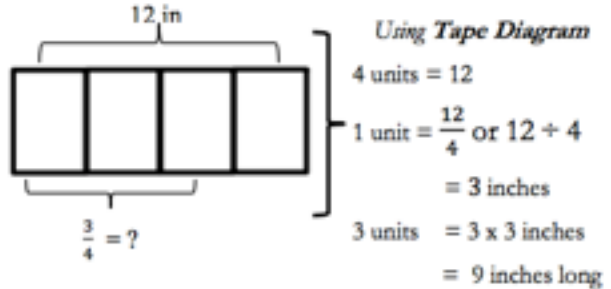
$$\begin{aligned} &\rightarrow = \frac{1}{3} \times 16 \text{ ounces} \\ &= \frac{1 \times 16}{3} \\ &= \frac{16}{3} \end{aligned}$$

ANSWER $\rightarrow = 5\frac{1}{3} \text{ ounces}$

Amanda measured the length of one of her books. It was $\frac{3}{4}$ of a foot. How long is her book in inches?

ft – foot in – inches

$$\frac{3}{4} \text{ of 1 foot} = \text{_____ inches}$$



Equation: $\frac{3}{4} \text{ ft} = \frac{3}{4} \times 1 \text{ ft}$

We know that 16 ounces is the same thing as 1 pound (lb), so we will rename the pound in our expression as ounces (oz).

$$\begin{aligned} &\rightarrow \frac{3}{4} \times 1 \text{ ft} = \frac{3}{4} \times 12 \text{ inches} \\ &= \frac{3 \times 12}{4} \\ &= \frac{36}{4} = 9 \end{aligned} \quad \text{OR} \quad \begin{aligned} &= \frac{3 \times \cancel{12}^3}{\cancel{4}_1} \\ &= \frac{9}{1} = 9 \end{aligned}$$

District Mathematics Website

Be sure to visit our District 97 5th Grade Math Resources Website. It has a ton of resources that can further assist your 5th Grade Family! Some of the specific elements are detailed below.

Website: <http://op97mathgrade5.weebly.com/module-4.html>

Homework Helper

Would you like written homework help specific for each lesson in this Topic? Click below to access it!

Website: http://op97mathgrade5.weebly.com/uploads/2/2/9/1/22918938/homework_helper-grade_5_module_4.pdf

Video Help

Flipped learning is a great way to review topics that your student is learning in the classroom. The following are links to videos that give detailed explanations for each lesson in this topic.

Website: <https://www.tes.com/lessons/ahONa5NczU7C7Q/video-help-module-4>

Module 4 Parent Tips

Eureka Math has created a guide to this Module specifically for parents. Click below to access it!

Website: http://op97mathgrade5.weebly.com/uploads/2/2/9/1/22918938/eureka_math_module_4_parent_tip_sheet.pdf