



MATH NEWS



Grade 5, Module 4, Topic C

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 a better 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 address Topic C.

Topic C. Multiplication of a Whole Number by a Fraction

Words to know

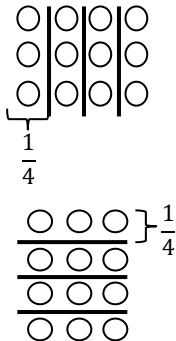
- Product
- Array
- Numerator
- Tape Diagram
- Denominator
- Commutative Property

Things to Remember:

- Product – the answer to a multiplication problem
- Array – to arrange or display
- Commutative Property – property that allows is to multiply factors in any order ($\frac{1}{2} \times 3$ is the same thing as $3 \times \frac{1}{2}$)



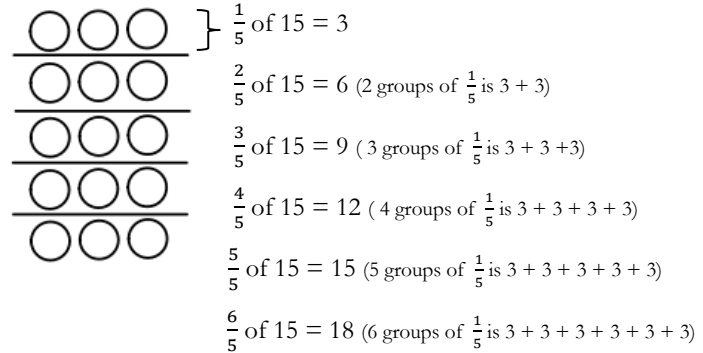
- To find $\frac{1}{4}$ of 12, make an **array** with 12 circles.
- Use lines to divide the **array** into 4 equal groups.
- Write a division sentence to represent what was done.
 $16 \div 4 = 4$ or $\frac{16}{4} = 4$
- Each group is $\frac{1}{4}$ of all the circles.
- So $\frac{1}{4}$ of 12 = 3



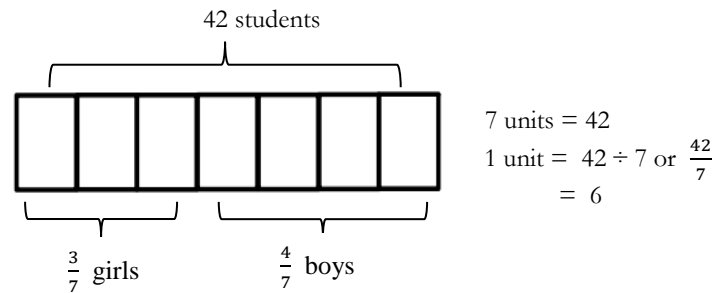
Focus Area– Topic C

Module 4: Multiplication and Division of Fractions and Decimal Fractions

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



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.
 $3 \text{ units} = 6 \times 3 = 18 \text{ students}$

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. $4 \text{ units} = 6 \times 4 = 24 \text{ students}$

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

Check: 18 girls + 24 boys = 42 total students

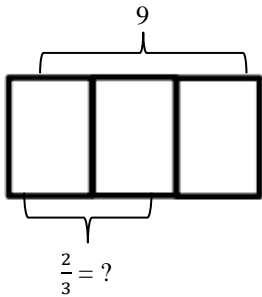
Objectives of Topic A

- 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.

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

Ways to interpret the above expression

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



3 units = 9
 1 unit = $\frac{9}{3}$ or $9 \div 3$
 = 3
 2 units = 2×3
 = 6
 Answer: $\frac{2}{3} \times 9 = 6$

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

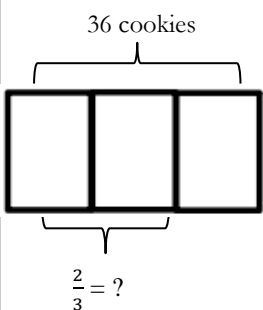
$$\begin{aligned} &= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} \\ &= \frac{2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2}{3} \\ &= \frac{9 \times 2}{3} \\ &= \frac{18}{3} \end{aligned}$$

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)

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



Using Tape Diagram
 3 units = 36
 1 unit = $\frac{36}{3}$ or $36 \div 3$
 = 12 cookies
 2 units = 2×12 cookies
 = 24 chocolate chip cookies

Numerical Procedure:

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

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

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

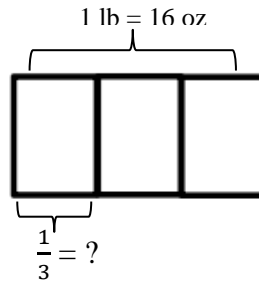
Solve the following problem using a tape diagram or an equation.

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

lb – pound

oz – ounce (16 oz is equal to 1 lb)

Tape Diagram



3 units = 16
 1 unit = $\frac{16}{3}$ or $16 \div 3$
 = $5 \frac{1}{3}$ 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).

$$\longrightarrow = \frac{1}{3} \times 16 \text{ ounces}$$

$$= \frac{1 \times 16}{3}$$

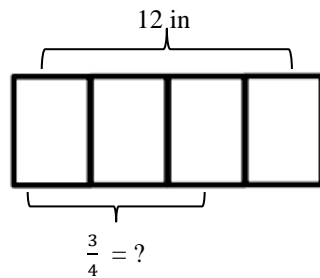
$$= \frac{16}{3}$$

ANSWER \longrightarrow = $5 \frac{1}{3}$ 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

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



Using Tape Diagram
 4 units = 12
 1 unit = $\frac{12}{4}$ or $12 \div 4$
 = 3 inches
 3 units = 3×3 inches
 = 9 inches long

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).

$$\longrightarrow \frac{3}{4} \times 1 \text{ ft} = \frac{3}{4} \times 12 \text{ inches}$$

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