



# Grade 5 Unit 4

## Adding, Subtracting, Multiplying and Dividing Fractions

Volume 1 Issue 4

### References

#### Helpful Links:

<https://smart.wikispaces.com/hcps.org/Grade+5+Number+and+Operations+Fractions>

<http://www.arcademics.com/games/dirt-bike-comparing-fractions/dirt-bike-comparing-fractions.html>

<http://www.counton.org/games/map-fractions/falling/>

[http://www.mathplayground.com/Fraction\\_bars.html](http://www.mathplayground.com/Fraction_bars.html)

<https://smart.wikispaces.com/hcps.org/iTunes+Intermediate+Apps>

#### Math Grade 5 Textbook Connection:

Ch. 8, Lessons 1, 2, 6 & 7  
Ch. 9 Lessons 1-11

#### Textbook Online:

<http://connected.mcgraw-hill.com/connected/login.do>

Ask your teacher for the online passcode.

### Dear Parents,

Your student's math class is calling for students to be actively engaged in doing math in order to learn math. In the classroom, students will frequently work on tasks and activities to discover and apply mathematical thinking. Students will be expected to explain or justify their answers and to write clearly and properly. Your students will receive a consumable textbook and online access from their teacher.

### Concepts Students will Use and Understand

- Use multiple strategies to find equivalent fractions
- Find and generate equivalent fractions and use them to solve problems
- Simplify fractions
- Use concrete, pictorial, and computational models to find common denominators
- Use fractions (proper and improper) and add and subtract fractions and mixed numbers with unlike denominators to solve problems
- Use concrete, pictorial, and computational models to multiply fractions
- Use concrete, pictorial, and computational models to divide unit fractions by whole number and whole numbers by unit fractions
- Estimate products and quotients

### Vocabulary

**Denominator:** The number below the line in the fraction. The denominator represents the number of equal pieces the whole is broken into.

**Mixed Number:** A number that is made up of a whole number and a fraction.

**Numerator:** The number above the line in a fraction. The numerator represents how many pieces of the whole, or how many parts of a set, that are discussed.

**Product:** The result (answer) of multiplying a set of numbers together.

**Factor:** A number that is multiplied by another (factor x factor = product)

**Equivalent Fractions:** Two or more fractions with the same value. Example:  $\frac{1}{2} = \frac{2}{4}$

**Improper Fractions:** A fraction where the numerator is greater than the denominator.

Try <http://intermath.coe.uga.edu/dictionary/homepg.asp> or <http://www.amathsdictionaryforkids.com/> for further examples.

### Example 1

$$\frac{2}{5} + \frac{7}{8} = \frac{16}{40} + \frac{35}{40} = \frac{51}{40}$$

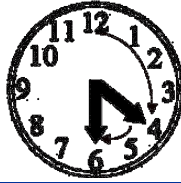
## Symbols

- + addition
- subtraction
- × multiplication
- ÷, / division
- / fraction
- ◇ variable
- n* variable

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### Example 2

Explore the problem  $\frac{1}{3} + \frac{1}{6}$ . Encourage students to use the clock face as a model for solving the problem. Have students share their approaches with the class and demonstrate their thinking using the clock model.



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### Example 3

Ten team members are sharing 3 boxes of cookies. How much of a box will each student get?

When working this problem a student should recognize that the 3 boxes are being divided into 10 groups, so s/he is seeing the solution to the following equation,  $10 \times n = 3$  (10 groups of some amount is 3 boxes) which can also be written as  $n = 3 \div 10$ . Using models or diagram, they divide each box into 10 groups, resulting in each team member getting  $\frac{3}{10}$  of a box.

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### Example 4

Your teacher gives 7 packs of paper to your group of 4 students. If you share the paper equally, how much paper does each student get?



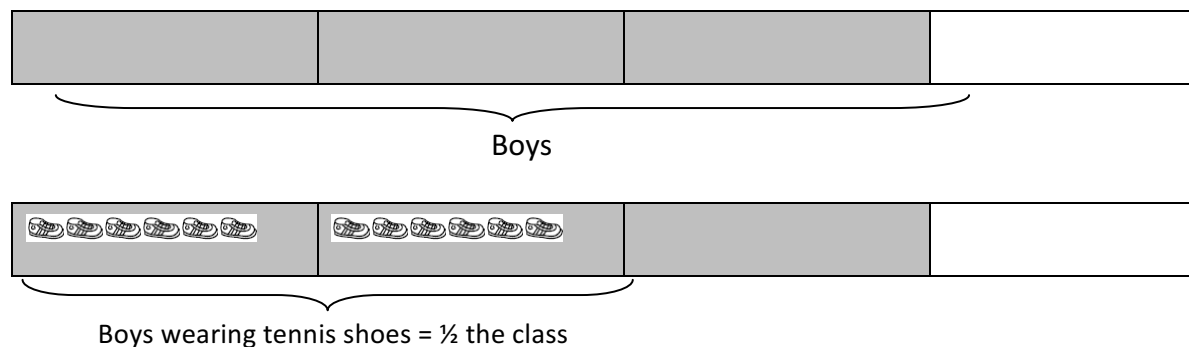
Each student receives 1 whole pack of paper and  $\frac{1}{4}$  of the each of the 3 packs of paper. So each student gets  $\frac{13}{4}$  packs of paper.

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### Example 5

Three-fourths of the class is boys. Two-thirds of the boys are wearing tennis shoes. What fraction of the class are boys wearing tennis shoes?

This question is asking what is  $\frac{2}{3}$  of  $\frac{3}{4}$  what is  $\frac{2}{3} \times \frac{3}{4}$ ? In this case you have  $\frac{2}{3}$  groups of size  $\frac{3}{4}$ . (A way to think about it in terms of the language for whole numbers is by using an example such as  $4 \times 5$ , which means you have 4 groups of size 5.)

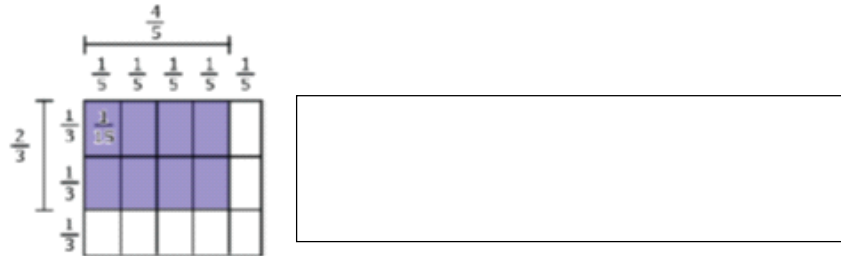


The array model is very transferable from whole number work and then to binomials.

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## Example 6

In solving the problem  $\frac{2}{3} \times \frac{4}{5}$ , students use an area model to visualize it as a 2 by 4 array of small rectangles each of which has side lengths  $\frac{1}{3}$  and  $\frac{1}{5}$ . They reason that  $\frac{1}{3} \times \frac{1}{5} = \frac{1}{(3 \times 5)}$  by counting squares in the entire rectangle, so the area of the shaded area is  $(2 \times 4) \times \frac{1}{(3 \times 5)} = \frac{(2 \times 4)}{(3 \times 5)}$ . They can explain that the product is less than  $\frac{4}{5}$  because they are finding  $\frac{2}{3}$  of  $\frac{4}{5}$ . They can further estimate that the answer must be between  $\frac{2}{5}$  and  $\frac{4}{5}$  because of is more than  $\frac{1}{2}$  of  $\frac{4}{5}$  and less than one group of  $\frac{4}{5}$ .



### Activities at Home:

- Create or pick numbers to make fractions. Add, subtract, or simplify the fractions that you find.
- Find examples of fractions around the house or neighborhood. Add, subtract, multiply, divide or simplify the fractions that you find.
- Create numbers to use in fractions. Draw these fractions as parts of a whole or set.
- Use measuring cups when baking or cooking.
- Identify the use of decimals in sporting events and in newspapers.
- Draw different shapes. Divide them into different fractions.
- Practice multiplication and division facts.