

## Lesson Plan Title

Adding and Subtracting Fractions

## Goals

Students will learn how to correctly add and subtract fractions with unlike denominators.

## Objectives

Students will be able to correctly solve problems of adding/subtracting two fractions 4/5 times.

Students will be able to identify an LCM between two fractions to create “like” denominators 5/5 times.

Students will restate the answer in simplest form 2/3 times.

## Discipline and Topic

This lesson will be part of a unit that deals with adding, subtracting, multiplying and dividing fractions, including mixed numbers. The concept of computing these operations with fractions is crucial, as it will turn up throughout their mathematical education.

## Target Population

This lesson is for a regular 6<sup>th</sup> grade mathematics class.

## Curriculum Alignment (State and Common Core)

NYS Standards:

6.N.16 Add and subtract fractions with unlike denominators

## Lesson Description

(5 min) First, the class will review fractions as a class by watching Video #1 - “Fruit Fractions- animated maths lesson” until 1:47.

- *What do we know about the fractions 4/5 and 8/10?*
- *What about 1, and 6/6?*

(5-10 min) Students will then do some warm-up problems as a class with adding and subtracting fractions that have common denominators (e.g.  $4/5 + 1/5 =$  ;  $6/7 - 2/7 =$  )

- *What do we notice about our fractions?*
- *How do our numerators and denominators compare within the problem?*

(10 min) Then the problem of  $1/3 + 1/6$  will be presented to the class. Students will discuss ideas of how to solve the problem. Remind students that they can draw pictures if it helps them think about the problem. A discussion will be done after everyone has a chance to think. After some

discussion, the rule of having a common denominator before adding and subtracting will be addressed. Some extra examples may be given from the teacher to the class to ensure students have an understanding. (e.g.  $\frac{1}{4} + \frac{1}{8} =$  ;  $\frac{4}{5} - \frac{1}{3} =$  ; etc.)

(10 min) Video #2- “Two fractions—song parody” will be played for the class until 2:05. The class will review the steps of adding/subtracting. The steps discussed should go along the lines of:

- 1) If the denominators are different, find the LCD (Least common denominator)
- 2) Multiply **both** the numerator **and** the denominator by a number that will result in the LCD
- 3) Add/subtract the numerators
- 4) Keep the denominator
- 5) Reduce if possible.

(5 min) Students will complete the ticket out the door. For homework, they will complete the attached homework and only do the evens on both pages.

### Supplemental Materials/Links

Homework retrieved from:

<http://www.math-salamanders.com/image-files/adding-subtracting-fractions-adding-fractions-2ans.gif>

<http://www.math-salamanders.com/image-files/free-printable-fraction-worksheets-subtracting-fractions-2ans.gif>

Video #1 - “Fruit Fractions- animated maths lesson”:

<http://www.youtube.com/watch?v=jJrtb-tL5Jk>

Video #2- “Two fractions—song parody”:

[http://www.youtube.com/watch?v=AP\\_\\_mcezDOI](http://www.youtube.com/watch?v=AP__mcezDOI)

## Assessment of Students

Name \_\_\_\_\_

Ticket out the door (6 points)

Add or subtract the following fractions. Make sure to clearly state the LCM and your **REDUCED** answer.

$$1) \frac{3}{4} - \frac{1}{2} = 1/4 \quad \text{LCM:4} \quad 2) \frac{2}{5} + \frac{1}{3} = 11/15 \quad \text{LCM:15} \quad 3) \frac{5}{9} - \frac{4}{18} = 6/18 = 1/3 \quad \text{LCM:9}$$

$$4) \frac{5}{6} - \frac{1}{3} = 2/6 = 1/2 \quad \text{LCM: 6}$$

$$5) \frac{2}{50} + \frac{1}{100} = 4/100 = 1/25 \quad \text{LCM:100}$$

Rubric: Ticket out the door

Objective	2	1	0
Students will be able to correctly solve problems of adding/subtracting two fractions	All answers are correct OR Only one answer is wrong	2-3 answers are wrong, resulting in only 2-3 right answers.	0-1 answer is correct.
Students will be able to identify an LCM between two fractions to create "like" denominators	All of the answers state the correct LCM	All the answers have an LCM stated except for 1-2 problems	No LCM is stated.
Students will restate the answer in simplest form	All answers from questions 3-5 are in simplest form OR one of the answers is not in simplest form	Only one answer is simplified from questions 3-5	No answers are simplified

Homework will be graded as right or wrong, and must be in simplest form. Each question will be worth 1 point for a total of 16 points.

## Evaluation of Lesson

If 80% or more of students received a 4/6 or higher on the ticket out the door, I would consider the lesson to be a success. Also, if 80% or more of students receive a 13/16 or better on the homework, I would also consider the lesson to be a success.

It would also be a good if the teacher informally concludes that around 75% of the class comprehends the lesson. This can be done by observing students discuss in partners, their responses, and the types of questions they ask.

### **Rationale for using the medium**

The two videos I chose cover the same topic, yet differ in their approaches. The “Fruit Fractions – animated maths lesson” video is great to show how changing the denominator of a fraction does not necessarily change the numerator, so long as the numerator is multiplied by the same number. The animation the video offers is great to see this relationship, as sometimes it is hard to show these concepts without taking so much time to do so. Students can easily see that  $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$ , and so on.

The second video, “Two Fractions—song parody” is also a great video to remind students about the rules of adding and subtracting fractions, yet in a fun way. I am sure most of the students are familiar with the original song, so it helps to relate to students in that manner. Also, the part where 8 would have worked for the common denominator, but the creator used 16 instead since it fits in with the lyrics better, shows students that even if the least common multiple is not used, the answer is still correct, and will be the same once reduced.

I believe that both videos will help students in understanding how fractions work and it also provides a fun way to help remember the rules that come with doing operations on fractions. The great thing is that these videos are a good supplement to the lesson, and will not be greatly affected if for some reason the videos fail to work.

Name

Date



## ADDING FRACTIONS SHEET 2 ANSWERS

1)  $\frac{1}{3} + \frac{2}{5} = \frac{1 \times 5}{3 \times 5} + \frac{2 \times 3}{5 \times 3} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$

2)  $\frac{1}{2} + \frac{1}{3} = \frac{1 \times 3}{2 \times 3} + \frac{1 \times 2}{3 \times 2} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

3)  $\frac{1}{4} + \frac{2}{3} = \frac{3}{12} + \frac{8}{12} = \frac{11}{12}$

4)  $\frac{1}{6} + \frac{3}{4} = \frac{4}{24} + \frac{18}{24} = \frac{22}{24}$

5)  $\frac{2}{5} + \frac{1}{4} = \frac{8}{20} + \frac{5}{20} = \frac{13}{20}$

6)  $\frac{2}{3} + \frac{2}{9} = \frac{6}{9} + \frac{2}{9} = \frac{8}{9}$

7)  $\frac{3}{7} + \frac{2}{5} = \frac{15}{35} + \frac{14}{35} = \frac{29}{35}$

8)  $\frac{1}{9} + \frac{5}{6} = \frac{6}{54} + \frac{45}{54} = \frac{51}{54}$

9)  $\frac{4}{7} + \frac{3}{4} = \frac{16}{28} + \frac{21}{28} = \frac{37}{28}$

10)  $\frac{5}{8} + \frac{2}{3} = \frac{15}{24} + \frac{16}{24} = \frac{31}{24}$

11)  $\frac{3}{8} + \frac{2}{5} = \frac{15}{40} + \frac{16}{40} = \frac{31}{40}$

12)  $\frac{3}{7} + \frac{3}{4} = \frac{12}{28} + \frac{21}{28} = \frac{33}{28}$

13)  $\frac{5}{9} + \frac{2}{5} = \frac{25}{45} + \frac{18}{45} = \frac{43}{45}$

14)  $\frac{3}{10} + \frac{2}{7} = \frac{21}{70} + \frac{20}{70} = \frac{41}{70}$

15)  $\frac{4}{7} + \frac{7}{8} = \frac{32}{56} + \frac{49}{56} = \frac{81}{56}$

16)  $\frac{3}{5} + \frac{1}{9} = \frac{27}{45} + \frac{5}{45} = \frac{32}{45}$

Name

Date

## SUBTRACTING FRACTIONS SHEET 2 ANSWERS



$$1) \frac{2}{3} - \frac{2}{5} = \frac{2 \times 5}{3 \times 5} - \frac{2 \times 3}{5 \times 3} = \frac{4}{15}$$

$$2) \frac{3}{4} - \frac{1}{3} = \frac{3 \times 3}{4 \times 3} - \frac{1 \times 4}{3 \times 4} = \frac{5}{12}$$

$$3) \frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$$

$$4) \frac{5}{6} - \frac{1}{4} = \frac{20}{24} - \frac{6}{24} = \frac{14}{24}$$

$$5) \frac{5}{6} - \frac{2}{5} = \frac{25}{30} - \frac{12}{30} = \frac{13}{30}$$

$$6) \frac{2}{3} - \frac{1}{4} = \frac{8}{12} - \frac{3}{12} = \frac{5}{12}$$

$$7) \frac{5}{7} - \frac{2}{5} = \frac{25}{35} - \frac{14}{35} = \frac{11}{35}$$

$$8) \frac{7}{8} - \frac{2}{3} = \frac{21}{24} - \frac{16}{24} = \frac{5}{24}$$

$$9) \frac{5}{9} - \frac{1}{4} = \frac{20}{36} - \frac{9}{36} = \frac{11}{36}$$

$$10) \frac{9}{10} - \frac{3}{4} = \frac{36}{40} - \frac{30}{40} = \frac{6}{40}$$

$$11) \frac{2}{3} - \frac{3}{8} = \frac{16}{24} - \frac{9}{24} = \frac{7}{24}$$

$$12) \frac{8}{9} - \frac{3}{5} = \frac{40}{45} - \frac{27}{45} = \frac{13}{45}$$

$$13) \frac{7}{10} - \frac{2}{7} = \frac{49}{70} - \frac{20}{70} = \frac{29}{70}$$

$$14) \frac{3}{4} - \frac{5}{7} = \frac{21}{28} - \frac{20}{28} = \frac{1}{28}$$

$$15) \frac{6}{7} - \frac{3}{8} = \frac{48}{56} - \frac{21}{56} = \frac{27}{56}$$

$$16) \frac{7}{8} - \frac{5}{9} = \frac{63}{72} - \frac{40}{72} = \frac{23}{72}$$