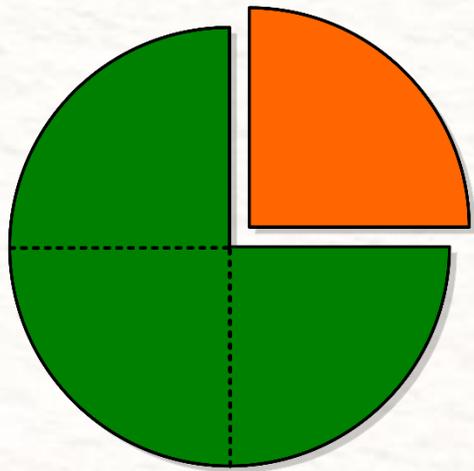


Operations with Fractions



- Multiply
- Divide
- Add
- Subtract

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Multiplication

- Multiply the numerators and write the numerator of the result
- Multiply the denominators and write the denominator of the result

$$\frac{7}{8} \times \frac{4}{9} = \frac{7 \times 4}{8 \times 9} = \frac{28}{72}$$

Multiplication - *Let's Try It!*



$$\frac{7}{5} \times \frac{3}{2} = \underline{\quad}$$

$$\frac{6}{7} \times \frac{2}{5} = \underline{\quad}$$

$$\frac{8}{5} \times \frac{4}{3} = \underline{\quad}$$

$$\frac{4}{9} \times \frac{7}{8} = \underline{\quad}$$

Multiplication - *Let's Try It!*

$$\frac{7}{5} \times \frac{3}{2} = \frac{21}{10}$$

$$\frac{6}{7} \times \frac{2}{5} = \frac{12}{35}$$

$$\frac{8}{5} \times \frac{4}{3} = \frac{32}{15}$$

$$\frac{4}{9} \times \frac{7}{8} = \frac{28}{72}$$

Simplification

Divide both numerator and denominator by the **Greatest Common Factor**

28 ← Factors are 1, 2, **4**, 7, 14, 28

72 ← Factors are 1, 2, 3, **4**, 6, 8, 9, 12, 18, 24, 48, 72

Greatest Common Factor is 4

$$\begin{array}{r} 28 \div 4 = 7 \\ 72 \div 4 = 18 \end{array}$$

So $\frac{28}{72} = \frac{7}{18}$

Simplification - *Let's Try It!*

$$\frac{3}{9} = \frac{\quad}{\quad}$$

$$\frac{7}{21} = \frac{\quad}{\quad}$$

$$\frac{18}{63} = \frac{\quad}{\quad}$$

$$\frac{24}{84} = \frac{\quad}{\quad}$$

$$\frac{6}{15} = \frac{\quad}{\quad}$$

$$\frac{78}{114} = \frac{\quad}{\quad}$$

Simplification - *Let's Try It!*

$$\frac{3}{9} = \frac{1}{3}$$

$$\frac{7}{21} = \frac{1}{3}$$

$$\frac{18}{63} = \frac{2}{7}$$

$$\frac{24}{84} = \frac{2}{7}$$

$$\frac{6}{15} = \frac{2}{5}$$

$$\frac{78}{114} = \frac{13}{19}$$

Division

Invert the second fraction and multiply

$$\frac{3}{8} \div \frac{1}{2} = \frac{3}{8} \times \frac{2}{1} = \frac{6}{8}$$


Division - *Let's Try It!*

$$\frac{7}{9} \div \frac{1}{2} = \underline{\quad}$$

$$\frac{4}{7} \div \frac{9}{11} = \underline{\quad}$$

$$\frac{7}{5} \div \frac{1}{3} = \underline{\quad}$$

$$\frac{20}{4} \div \frac{7}{10} = \underline{\quad}$$

Division - *Let's Try It!*

$$\frac{7}{9} \div \frac{1}{2} = \frac{14}{9}$$

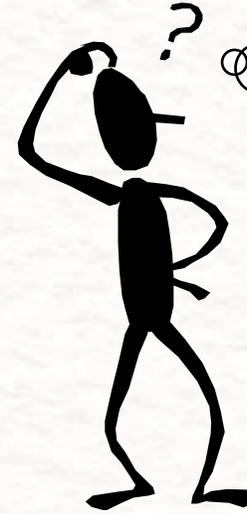
$$\frac{4}{7} \div \frac{9}{11} = \frac{44}{63}$$

$$\frac{7}{5} \div \frac{1}{3} = \frac{21}{5}$$

$$\frac{20}{4} \div \frac{7}{10} = \frac{50}{7}$$

Addition

- To add two fractions, you must make sure they have a **Common Denominator**
- What can you multiply each fraction by to give the smallest common denominator?



What is a
**Common
Denominator?**

A **common denominator** is a number with which both of the denominators share at least one factor that is not the number 1

$$\frac{3}{8} + \frac{5}{16}$$

The smallest number that has both of these as factors is 16

Once you have a common denominator, add the numerators.

8 goes into 16 **two** times

$$\frac{3}{8} \times \frac{2}{2} = \frac{6}{16}$$

16 goes into 16 **one** time

$$\frac{5}{16} \times \frac{1}{1} = \frac{5}{16}$$

$$\frac{6}{16} + \frac{5}{16} = \frac{11}{16}$$

Addition - *Let's Try It!*

$$\frac{1}{4} + \frac{1}{2} = \underline{\quad}$$

$$\frac{4}{16} + \frac{2}{8} = \underline{\quad}$$

$$\frac{6}{8} + \frac{2}{3} = \underline{\quad}$$

$$\frac{13}{16} + \frac{3}{4} = \underline{\quad}$$

Addition - *Let's Try It!*

$$\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$$

$$\frac{4}{16} + \frac{2}{8} = \frac{1}{2}$$

$$\frac{6}{8} + \frac{2}{3} = \frac{17}{12}$$

$$\frac{13}{16} + \frac{3}{4} = \frac{25}{16}$$

Subtraction

- To subtract two fractions, they also must have a **Common Denominator**
- What can you multiply each fraction by to give the smallest common denominator?

$$\frac{3}{8} - \frac{5}{16}$$

8 goes into 16 **two** times

$$\frac{3}{8} \times \frac{2}{2} = \frac{6}{16}$$

16 goes into 16 **one** time

$$\frac{5}{16} \times \frac{1}{1} = \frac{5}{16}$$

The smallest number that has both of these as factors is 16

Once you have a common denominator, subtract the numerators.

$$\frac{6}{16} - \frac{5}{16} = \frac{1}{16}$$

Subtraction - *Let's Try It!*

$$\frac{7}{8} - \frac{1}{2} = \underline{\quad}$$

$$\frac{9}{16} - \frac{3}{8} = \underline{\quad}$$

$$\frac{6}{8} - \frac{1}{2} = \underline{\quad}$$

$$\frac{5}{4} - \frac{7}{16} = \underline{\quad}$$

Subtraction - *Let's Try It!*

$$\frac{7}{8} - \frac{1}{2} = \frac{3}{8}$$

$$\frac{9}{16} - \frac{3}{8} = \frac{3}{16}$$

$$\frac{6}{8} - \frac{1}{2} = \frac{1}{4}$$

$$\frac{5}{4} - \frac{7}{16} = \frac{13}{16}$$

Fraction math operation

Let's Try It!

<https://goo.gl/W6OsSW>

<https://goo.gl/rPjo2z>

<https://goo.gl/YuRyMN>

<https://goo.gl/R57BVR>