

Down and Dirty: A “how to” Math Book
By Phyllis Hunsinger
www.DownandDirtyMath.com

How to Find a Common Denominator

What? Common denominators exist when the denominator of each fraction is the same.

When? Common denominators are needed when:

- (1) Comparing fractions
- (2) Adding fractions
- (3) Subtracting fractions

Why? The old adage that “*You cannot compare apples and oranges.*” is true for common denominators. In order to add, subtract, or compare fractions, first find a common denominator.

How? There are several ways to derive a common denominator, but the easiest way may be:

- (1) Multiply the denominators to secure a number into which all the denominators divide
- (2) Determine what number was multiplied to find each new denominator
- (3) Multiply the numerator by that same number to create an equivalent fraction.

Example: To find a common denominator between $\frac{1}{3}$ and $\frac{3}{4}$

- (1) Multiply $3 \times 4 = 12$
- (2) Multiply the first fraction by 4 and the second fraction by 3
- (3) $\frac{1}{3} \cdot \frac{4}{4} = \frac{4}{12}$ and $\frac{3}{4} \cdot \frac{3}{3} = \frac{9}{12}$ therefore $\frac{1}{3} = \frac{4}{12}$ and $\frac{3}{4} = \frac{9}{12}$

Example: To find a common denominator between $\frac{3}{7}$ and $\frac{2}{5}$

- (1) Multiply $7 \times 5 = 35$
 - (2) Multiply the first fraction by 5 and the second fraction by 7
- $$\frac{3}{7} \cdot \frac{5}{5} = \frac{15}{35} \quad \text{and} \quad \frac{2}{5} \cdot \frac{7}{7} = \frac{14}{35} \quad \text{therefore} \quad \frac{3}{7} = \frac{15}{35} \quad \text{and} \quad \frac{2}{5} = \frac{14}{35}$$

Example: To find a common denominator between $\frac{5}{8}$ or $\frac{1}{2}$

- (1) Change $\frac{1}{2}$ to 8ths by multiplying both numerator and denominator by 4
- (2) $\frac{1}{2} = \frac{4}{8} \therefore \frac{4}{8}$ can be added to, subtracted from, or compared with $\frac{5}{8}$
because the denominators now match