

Math with Fractions

This job aid was created to help you in performing math equations that include fractions.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Sections

- Addition and Subtraction of Fractions
- Multiplication of Fractions
- Division of Fractions
- Converting Decimals to Fractions

Addition and Subtraction of Fractions

If the denominators are the same...

— Add/subtract the numerators

— Example A: $\frac{2}{16} + \frac{3}{16} + \frac{1}{16} = \frac{5}{16}$

— Example B: $\frac{5}{8} - \frac{3}{8} = \frac{2}{8} = \frac{1}{4}$

If different denominators...

— Determine the lowest common denominator so that you can express each fraction in an equivalent form. The lowest common denominator is the lowest number that the denominator of each fraction will divide into.

— Example: $\frac{3}{5} - \frac{1}{9} + \frac{7}{15} = \frac{27}{45} - \frac{5}{45} + \frac{21}{45} = \frac{43}{45}$

If mixed numbers...

— Convert them to improper fractions before adding/subtracting them.

— Example: $1\frac{1}{3} + 2\frac{4}{9} - \frac{2}{3} = \frac{4}{3} + \frac{22}{9} - \frac{2}{3} = \frac{12}{9} + \frac{22}{9} - \frac{6}{9} = \frac{28}{9} = 3\frac{1}{9}$

Multiplication of Fractions

Multiply all of the numerators together and all of the denominators together.

— Example: $\frac{2}{5} \times \frac{3}{7} = \frac{2 \times 3}{5 \times 7} = \frac{6}{35}$

If mixed numbers...

— Convert them to improper fractions before multiplying.

— Example: $1\frac{1}{7} \times 2\frac{1}{3} = \frac{8}{7} \times \frac{7}{3} = \frac{56}{21} = 2\frac{14}{21} = 2\frac{2}{3}$

Division of Fractions

- ❑ Invert the fraction which you are dividing by and multiply.

— Example: $\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = 2$

- ❑ If mixed numbers...

— Convert them to improper fractions before inverting and multiplying.

— Example: $3\frac{3}{4} \div \frac{5}{8} = \frac{15}{4} \div \frac{5}{8} = \frac{15}{4} \times \frac{8}{5} = \frac{120}{20} = \frac{6}{1} = 6$

Converting Decimals to Fractions

- ❑ Step 1: Write decimal over 1, like this $\frac{\text{decimal}}{1}$
- ❑ Step 2: Multiply both top and bottom by 10 for every number after the decimal point.
- ❑ Step 3: Simplify the fraction.

— Example: $0.75 = \frac{0.75}{1} \times 100 = \frac{75}{100} = \frac{15}{20} = \frac{3}{4}$