

Working With Decimal Numbers

Estimation can help you work with decimal numbers. For example, you can use estimation to place the decimal point in the correct position in the answer.

$$16.94 + 3.41 + 81.07 = 101.42$$

Estimate: $17 + 3 + 80 = 100$

Calculation: 101.42

Place the decimal so that the answer is close to 100.

- Without calculating the answer, place the decimal point in the correct position to make a true statement.
 - $149.8 \div 0.98 = 15285714$
 - $2.7 \times 100.9 = 272430$
 - $40.6 \times 9.61 = 39016600$
- Is 349×0.9 greater than, less than, or equal to 349? How do you know?

Understanding Fractions

A fraction can represent parts of a whole.

The shaded part of the diagram shows $\frac{4}{8}$ or $\frac{1}{2}$ or 0.5.



Compare $\frac{3}{8}$ and $\frac{2}{6}$. Use denominators that are the same.

$$\frac{3}{8} = \frac{9}{24}$$

(Multiplied by 3 on both numerator and denominator)

$$\frac{2}{6} = \frac{8}{24}$$

(Multiplied by 4 on both numerator and denominator)

$$\frac{9}{24} > \frac{8}{24}, \text{ therefore } \frac{3}{8} > \frac{2}{6}$$

- Give the fraction and decimal value for the shaded part of each diagram.
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- Compare each set of fractions by arranging them from smallest to largest.
 - $\frac{3}{4}$ and $\frac{7}{10}$
 - $\frac{3}{8}$, $\frac{2}{7}$, and $\frac{1}{3}$

Adding or Subtracting Fractions

When adding or subtracting fractions, work with parts of the whole that are of equal size. You can

- use diagrams

$$\begin{aligned} \frac{2}{3} + \frac{1}{6} & \quad \begin{array}{|c|c|c|c|} \hline \text{shaded} & \text{shaded} & & \\ \hline \end{array} + \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline \end{array} \\ = \frac{4}{6} + \frac{1}{6} & \quad \begin{array}{|c|c|c|c|c|c|} \hline \text{shaded} & \text{shaded} & \text{shaded} & & & \\ \hline \end{array} + \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline \end{array} \\ = \frac{5}{6} & \quad \begin{array}{|c|c|c|c|c|c|} \hline \text{shaded} & \text{shaded} & \text{shaded} & \text{shaded} & & \\ \hline \end{array} \end{aligned}$$

- use a common denominator

$$\begin{aligned} \frac{2}{3} - \frac{5}{8} \\ = \frac{16}{24} - \frac{15}{24} \\ = \frac{1}{24} \end{aligned}$$

5. Write each statement shown by the fraction strips.

a) $\begin{array}{|c|c|c|c|} \hline \text{shaded} & & & \\ \hline \end{array} + \begin{array}{|c|c|c|c|c|c|} \hline \text{shaded} & \text{shaded} & \text{shaded} & \text{shaded} & & \\ \hline \end{array}$

b) $\begin{array}{|c|c|c|c|} \hline \text{shaded} & \text{shaded} & & \\ \hline \end{array} - \begin{array}{|c|c|c|c|} \hline \text{shaded} & \text{shaded} & \text{shaded} & \\ \hline \end{array}$

6. Determine the sum or difference. Give your answer in lowest terms.

a) $\frac{1}{2} + \frac{3}{8}$

b) $\frac{5}{6} - \frac{3}{4}$

Multiplying and Dividing Fractions

To multiply two proper fractions, you can multiply the numerators and multiply the denominators. $\frac{1}{2} \times \frac{2}{3} = \frac{1 \times 2}{2 \times 3}$

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

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

To divide two fractions, you can

- use a common denominator and divide the numerators

$$\begin{aligned} \frac{7}{10} \div \frac{2}{5} &= \frac{7}{10} \div \frac{4}{10} \\ &= \frac{7}{4} \text{ or } 1\frac{3}{4} \end{aligned}$$

- multiply by the reciprocal of the second fraction

$$\begin{aligned} \frac{7}{10} \div \frac{2}{5} &= \frac{7}{10} \times \frac{5}{2} \\ &= \frac{35}{20} \text{ or } \frac{7}{4} \text{ or } 1\frac{3}{4} \end{aligned}$$

7. Multiply. Give your answer in lowest terms.

a) $\frac{3}{4} \times \frac{5}{6}$

b) $\frac{11}{2} \times \frac{3}{4}$

8. Divide.

a) $\frac{15}{2} \div \frac{3}{4}$

b) $1\frac{2}{3} \div \frac{1}{2}$