



MATHEMATICS 506

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Alpha Omega Publications®

804 N. 2nd Ave. E., Rock Rapids, IA 51246-1759

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I. Part One

Objectives

To add and subtract fractions
 To learn about 2-dimensional and 3-dimensional figures
 To solve missing number problems

1.1 Describe each number as ...

a. proper fraction b. improper fraction c. mixed number

$\frac{9}{6}$ _____

$1\frac{3}{5}$ _____

$\frac{5}{8}$ _____

$\frac{7}{2}$ _____

$2\frac{1}{3}$ _____

$\frac{4}{7}$ _____

$\frac{12}{3}$ _____

$\frac{9}{10}$ _____

1.2 Write in words.

$\frac{3}{8}$ _____

$\frac{7}{9}$ _____

$\frac{3}{2}$ _____

$\frac{6}{5}$ _____

$5\frac{2}{5}$ _____

$7\frac{4}{9}$ _____

The factors of a number are all of the numbers that, when multiplied together, produce a given number. Factors are written in number order.

1.3 Write all of the facts that are equal to 8.

$\frac{x}{8} \quad \frac{x}{8} \quad \frac{x}{8} \quad \frac{x}{8} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}}$

What four numbers make up the facts for 8? _____, _____, _____, _____

What are the factors of 8? _____, _____, _____, _____

Write all of the facts that are equal to 12.

$\frac{x}{12} \quad \frac{x}{12} \quad \frac{x}{12} \quad \frac{x}{12} \quad \frac{x}{12} \quad \frac{x}{12}$

What six numbers make up the facts for 12? _____, _____, _____, _____, _____, _____

What are the factors of 12? _____, _____, _____, _____, _____, _____

What is the largest factor common to 8 and 12? _____

What is the largest number that will divide evenly into 8 and 12? _____

▲ Proper fractions can be reduced to lowest terms by dividing the numerator and denominator by their greatest (largest) common factor.

1.4 Reduce proper fractions to lowest terms.

$$\frac{8}{12} = \quad \frac{14}{16} = \quad \frac{12}{18} = \quad \frac{20}{25} = \quad \frac{9}{15} = \quad \frac{15}{21} =$$

■ Improper fractions can be reduced to lowest terms by dividing the denominator into the numerator. Write the remainder as a fraction.

1.5 Reduce improper fractions to lowest terms.

$$\frac{9}{8} = \quad \frac{14}{3} = \quad \frac{11}{5} = \quad \frac{21}{8} = \quad \frac{6}{3} = \quad \frac{7}{4} =$$

■ Improper fractions may need to be further reduced.

$$\frac{4}{8} \text{ can be reduced to } \frac{1}{2}. \quad \frac{12}{8} = 1\frac{4}{8} = 1\frac{1}{2}$$

1.6 Reduce improper fractions to lowest terms.

$$\frac{14}{4} = \quad = \quad \frac{26}{6} = \quad = \quad \frac{22}{8} = \quad =$$

1.7 Follow the steps to add or subtract fractions and mixed numbers.
Add or subtract fractions. Reduce fractions to lowest terms.
Add or subtract whole numbers.

a.

$$\begin{array}{r} \frac{3}{8} \\ + \frac{1}{8} \\ \hline \end{array} \quad \begin{array}{r} \frac{5}{9} \\ + \frac{7}{9} \\ \hline \end{array} \quad \begin{array}{r} \frac{3}{7} \\ + \frac{4}{7} \\ \hline \end{array} \quad \begin{array}{r} \frac{11}{12} \\ - \frac{5}{12} \\ \hline \end{array}$$

b.

$$\begin{array}{r} \frac{5}{6} \\ - \frac{1}{6} \\ \hline \end{array} \quad \begin{array}{r} \frac{3}{4} \\ - \frac{1}{4} \\ \hline \end{array} \quad \begin{array}{r} 5\frac{1}{4} \\ + 2\frac{1}{4} \\ \hline \end{array} \quad \begin{array}{r} 4\frac{2}{3} \\ + 5\frac{1}{3} \\ \hline \end{array}$$

c.

$$\begin{array}{r} 6\frac{2}{9} \\ + 8\frac{4}{9} \\ \hline \end{array} \quad \begin{array}{r} 8\frac{1}{2} \\ - 3\frac{1}{2} \\ \hline \end{array} \quad \begin{array}{r} 7\frac{5}{8} \\ - 6\frac{3}{8} \\ \hline \end{array} \quad \begin{array}{r} 4\frac{9}{10} \\ - 2\frac{4}{10} \\ \hline \end{array}$$

▲ Multiples of numbers are the products of the number.



1.8 Write five multiples for 6 and 8.

$1 \times 6 = \underline{\quad}$ $2 \times 6 = \underline{\quad}$ $3 \times 6 = \underline{\quad}$ $4 \times 6 = \underline{\quad}$ $5 \times 6 = \underline{\quad}$

$1 \times 8 = \underline{\quad}$ $2 \times 8 = \underline{\quad}$ $3 \times 8 = \underline{\quad}$ $4 \times 8 = \underline{\quad}$ $5 \times 8 = \underline{\quad}$

Write multiples in number order for ...

6: $\underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}$ 8: $\underline{\quad}, \underline{\quad}, \underline{\quad}, \underline{\quad}$

Write the smallest common multiple for 6 and 8. $\underline{\quad}$

■ Fractions *must* have the same denominator to be added or subtracted.
Find a common denominator by finding the smallest common multiple.

The common denominator of $\frac{5}{6}$ and $\frac{3}{8}$ is 24.

$\frac{5}{6} = \frac{20}{24}$ $24 \div 6 = 4$
 $4 \times 5 = 20$

Change $\frac{5}{6}$ and $\frac{3}{8}$ to equivalent fractions.

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

Divide the denominators and multiply the numerators.

1.9 Name the common denominator. Write the new fraction (s).

$\frac{3}{4}, \frac{7}{8}$ $\underline{\quad}$ $\underline{\quad} = \underline{\quad}$ $\frac{5}{8}, \frac{3}{10}$ $\underline{\quad}$ $\underline{\quad} = \underline{\quad}$ $\underline{\quad} = \underline{\quad}$

1.10 Follow the steps to add or subtract fractions and mixed numbers.

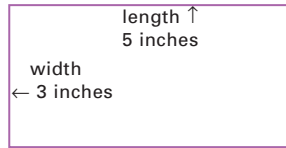
Write equivalent fractions. Add or subtract.

Reduce answers to lowest terms. Add or subtract whole numbers.

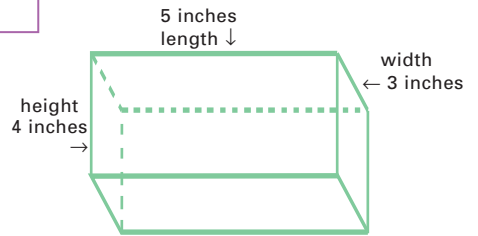
a. $\frac{3}{4}$ $\frac{5}{6}$ $\frac{3}{10}$ $\frac{3}{4}$ $\frac{11}{12}$
 + $\frac{2}{8}$ + $\frac{2}{3}$ + $\frac{1}{5}$ - $\frac{1}{3}$ - $\frac{1}{4}$
 ----- ----- ----- ----- -----

b. $2\frac{4}{5}$ $7\frac{2}{4}$ $6\frac{7}{9}$ $8\frac{5}{8}$
 + $4\frac{2}{3}$ + $3\frac{2}{5}$ - $4\frac{2}{6}$ - $5\frac{1}{4}$
 ----- ----- ----- -----

Rectangles lie flat on a surface.
 They have length and width.
 They are two-dimensional figures.
 (L) 5 inches (W) 3 inches

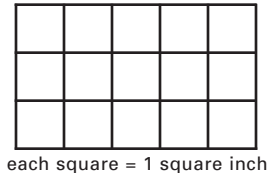


Rectangular solids take up space.
 They have length, width, and height.
 They are three-dimensional figures.
 (L) 5 inches (W) 3 inches (H) 4 inches



Rectangles are measured by finding the perimeter or area.
 Perimeter is measured in *linear* inches, area in *square* inches.

1.11 Find the perimeter and area measurement for the rectangle in the illustration. *Label answers correctly.*



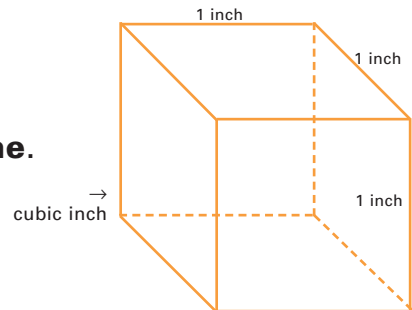
$P = (2 \times L) + (2 \times W)$

$A = L \times W$

P = _____

A = _____

Rectangular solids are measured by finding the **volume**.
 Volume is measured in cubic inches.
 A cubic inch looks like a block.



1.12 Imagine that you could cover the bottom of the rectangular solid shown at the top of the page with a layer of cubic inches. How many cubic inches would you need?

How many layers would it take to fill the solid?

How many cubic inches to fill the whole solid?

The formula for volume is length times width times height.

1.13 Use the formula to find the volume for the rectangular solid at the top of the page.

$V = L \times W \times H$

Is the answer the same as the answer to ex. 1.12? _____

V = _____