



MATHEMATICS 505

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I. Part One

Objectives

To multiply with a three-digit multiplier
To learn the American Standard Measurements
To add and subtract mixed numbers

▲ We can solve multiplication problems with three-digit multipliers.

■ Multiply three small problems. Add the answers.



$$\begin{array}{r} 743 \\ \times 258 \\ \hline 5944 \\ 37150 \\ 148600 \\ \hline 191,694 \end{array}$$

$$\begin{array}{r} 743 \\ \times 8 \\ \hline 5944 \end{array}$$

Multiply 743 by 8 ones.

Write a 0 place holder in ones' place below the 4.

$$\begin{array}{r} 743 \\ \times 5 \\ \hline 3715 \end{array}$$

Multiply 743 by 5 tens.

Write a 0 place holder in ones' place below the 0.

Write a 0 place holder in tens' place below the 5.

$$\begin{array}{r} 743 \\ \times 2 \\ \hline 1486 \end{array}$$

Multiply 743 by 2 hundreds.

Add. Write a comma in the answer.

1.1 Follow the steps.

$$\begin{array}{r} 837 \\ \times 563 \\ \hline \end{array}$$

$$\begin{array}{r} 837 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 837 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 837 \\ \times 5 \\ \hline \end{array}$$

Multiply 837 by 3 ones.

Write a zero place holder.

Multiply 837 by 6 tens.

Write two zero place holders.

Multiply 837 by 5 hundreds.

Add. Write a comma.

+

1.2 Multiply.

$$\begin{array}{r} 236 \\ \times 456 \\ \hline \end{array}$$

$$\begin{array}{r} 547 \\ \times 253 \\ \hline \end{array}$$

$$\begin{array}{r} 730 \\ \times 592 \\ \hline \end{array}$$

$$\begin{array}{r} 921 \\ \times 638 \\ \hline \end{array}$$

▲ In the United States, the most common system of measurement is the ...

English System of Weights and Measures (American Standard)

Length	Weight	Dry Measure	Liquid Measure
12 inches = 1 foot	16 ounces = 1 pound	2 cups = 1 pint	16 fl.* ounces = 1 pint
3 feet = 1 yard	2,000 lb. = 1 ton	2 pints = 1 quart	2 cups = 1 pint
36 inches = 1 yard		8 quarts = 1 peck	2 pints = 1 quart
5,280 ft = 1 mile	Square	4 pecks = 1 bushel	4 quarts = 1 gallon
320 rods = 1 mile	144 sq.* in. = 1 sq. ft.		*square
	9 sq. ft. = 1 sq. yd.		*fluid

Linear measurement measures "how long."

Square measurement measures surface.

Square measurement uses the same terms as linear measurement.

Weight measures "how heavy."

Volume measures "how much."

Volume may be measured in dry or liquid units.

■ Each unit of measurement can be abbreviated.

in. = inches	ft. = feet	yd. = yards	mi. = miles	rd. = rods
oz. = ounces	lb. = pounds	T. = tons	pt. = pints	qt. = quarts
pk. = pecks	bu. = bushels	C. = cup	gal. = gallons	


1.3 Write (L) length, (S) square, (W) weight, (Q) liquid volume, or (D) dry volume. Write the unit of measurement you would use.

- a. drink of soda _____
- b. box of detergent _____
- c. gas for a car _____
- d. bag of apples _____
- e. five peanuts _____
- f. can of paint _____
- g. size of back yard _____
- h. boards to build a fence _____
- i. box of strawberries _____
- j. distance from your house to the store _____





■ We can convert large units of measurement to smaller units by multiplication.


There are 4 quarts in a gallon.



 $1 \text{ gal.} \quad 1 \text{ gal.} \quad 1 \text{ gal.} \quad = \quad 3 \text{ gal.} \quad \times \quad 4 \text{ qt.} \quad = \quad 12 \text{ qt.}$

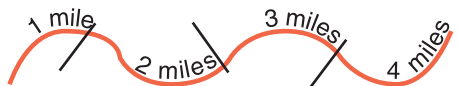
1.4 Convert large to small by multiplication.

a.  $1 \text{ ft.} \quad 1 \text{ ft.} \quad 1 \text{ ft.} \quad = \quad \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ in.}$

b.  $1 \text{ pt.} \quad 1 \text{ pt.} \quad 1 \text{ pt.} \quad 1 \text{ pt.} \quad = \quad \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ C.}$

c.  $1 \text{ T.} \quad 1 \text{ T.} \quad = \quad \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ lb.}$

d.  $1 \text{ bu.} \quad 1 \text{ bu.} \quad 1 \text{ bu.} \quad 1 \text{ bu.} \quad = \quad \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ pk.}$

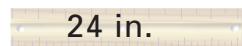
e.  $1 \text{ mile} \quad 2 \text{ miles} \quad 3 \text{ miles} \quad 4 \text{ miles} \quad = \quad \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ ft.}$


■ We can convert small units to large units by division.


There are 2 cups in a pint.



 $1 \text{ C.} \quad 1 \text{ C.} \quad 1 \text{ C.} \quad 1 \text{ C.} \quad = \quad 4 \text{ C.} \quad \div \quad 2 \text{ C.} \quad = \quad 2 \text{ pt.}$


1.5 Convert small to large by division.


a.  $24 \text{ in.} \quad = \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ ft.}$

b.  $6,000 \text{ lb.} \quad = \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ T.}$

c.  $48 \text{ oz.} \quad = \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ lb.}$

d.  $8 \text{ pk.} \quad = \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ bu.}$

e.  $15 \text{ ft.} \quad = \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ yd.}$

 We can add and subtract mixed numbers with unlike denominators.

$$\begin{array}{r}
 4\frac{5}{6} = \frac{10}{12} \\
 + 2\frac{1}{4} = \frac{3}{12} \\
 \hline
 6 \quad \frac{13}{12} = 1\frac{1}{12} \\
 \\
 1\frac{1}{12} \\
 \hline
 7\frac{1}{12}
 \end{array}$$

Find the new denominator.
 List the multiples of 6 and 4.
 Write the smallest common multiple.
 Find the new numerators.
 Divide. Multiply. Write.
 Add fractions and simplify.
 Add whole numbers.
 Combine whole numbers and fractions.

1.6 Add or subtract. Simplify or reduce answers to lowest terms.

a.
$$\begin{array}{r}
 3\frac{2}{3} \\
 + 5\frac{5}{6} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 7\frac{4}{5} \\
 + 3\frac{7}{10} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4\frac{5}{9} \\
 + 2\frac{2}{3} \\
 \hline
 \end{array}$$

b.
$$\begin{array}{r}
 8\frac{4}{6} \\
 - 3\frac{1}{4} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 9\frac{11}{12} \\
 - 2\frac{2}{3} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 6\frac{3}{4} \\
 - 2\frac{3}{8} \\
 \hline
 \end{array}$$

c.
$$\begin{array}{r}
 2\frac{5}{6} \\
 + 7\frac{3}{8} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4\frac{5}{12} \\
 + 3\frac{7}{9} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 8\frac{3}{5} \\
 + 4\frac{7}{15} \\
 \hline
 \end{array}$$

1.7 Write in words.

a. $\frac{5}{9}$ _____ $12\frac{3}{8}$ _____

b. 475,028,643 _____

