

## Adding and Subtracting Decimals

**Write in vertical form.** When you are adding or subtracting decimals, write the addition/subtraction problem in vertical form. Be sure to line up the decimal points. If you need additional decimal places in one or more of the numbers, simply annex a 0 after the last number in each term that is deficient in decimal places. Write the decimal point in the answer directly below the decimal point in the problem. Then you will add/subtract as you would with whole numbers.

Example:  $24.1 + 1,234.12$

$$\begin{array}{r} 24.1 \\ + 1,234.12 \\ \hline \end{array}$$

$$\begin{array}{r} 24.10 \\ + 1,234.12 \\ \hline 1,258.22 \end{array}$$

1.  $23.3 + 34.67 =$

2.  $123.45 - 1.652 =$

3.  $34.33 + 12.34 + 2.421 =$

4.  $11.234 - 7.9 =$

*You must show your work. If it looks like you used a calculator, you will not get credit.*

# Multiplying Decimals

***Line up like whole numbers.*** When you are multiplying numbers with decimals, line up the numbers like they were whole numbers. Multiply as if they were whole numbers. Then count the number of decimals in the multiplier and the multiplicand, and this is the number of decimal places you will need in the answer. If you have need more decimal places than there are numbers in the answer, add the required number of zeros to the right of the answer.

Example

$$\begin{array}{r}
 25.2 \\
 25.2 \times 1.24 \\
 \hline
 1008 \\
 5040 \\
 \hline
 25200 \\
 31248 \\
 \hline
 31.248
 \end{array}$$

Since there are 3 decimal places (in total) in the multiplier and multiplicand you will need 3 in the answer.

1.  $23.3 \times 1.67 =$

2.  $123.45 \times 1.6 =$

3.  $34.33 \times 2.421 =$

4.  $.234 \times 2.9 =$

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# Dividing Decimals

***The divisor must be a whole number.*** If the divisor is a whole number (no decimal places) simply move the decimal in the dividend to the answer and divide as if they were whole numbers. If the divisor has decimal places, move the decimal point to the right as many spaces as needed. Then move the decimal point in the dividend the same number of places to the right. Then divide as above.

Example

$$2.5 \overline{) 1125.75}$$

$$\begin{array}{r}
 450.3 \\
 25 \overline{) 11257.5} \\
 \underline{100} \phantom{0} \\
 125 \phantom{0} \\
 \underline{125} \phantom{0} \\
 075 \\
 \underline{75} \\
 0
 \end{array}$$

Move decimal one to the right, then straight up then divide

Round the answers to the nearest tenth

1.  $15.3 \overline{) 19.67}$

2.  $12 \overline{) 1.648}$

3.  $3.3 \overline{) 2.421}$

4.  $.23 \overline{) 2.986}$

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# Multiplying Fractions

**Method to Multiplication.** When multiplying fractions, multiply the numerators to get the new numerator and multiply the denominators to get the new denominator. Simplify the answer if possible. If one of the numbers is a whole number or a mixed number, convert it to a fraction.

Examples  $\frac{2}{3} \times \frac{6}{7} = \frac{12}{21} = \frac{3 \cdot 4}{3 \cdot 7} = \frac{4}{7}$

$$1\frac{1}{2} \times 150 =$$

$$\frac{3}{2} \times \frac{150}{1} = \frac{450}{2} = 225$$

1.  $\frac{3}{4} \times \frac{5}{9} =$

2.  $1\frac{3}{4} \times \frac{5}{14} =$

3.  $\frac{3}{4} \times 152 =$

4.  $2\frac{3}{4} \times 1\frac{1}{22} =$

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# Dividing Fractions

**Find the Reciprocal.** When dividing fractions you will multiply the dividend by the reciprocal of the divisor. That is, flip the divisor and multiply. If either number is not a fraction (whole number or mixed number) convert it first to a fraction.

Example  $\frac{2}{3} \div \frac{5}{6} =$   
 $\frac{2}{3} \times \frac{6}{5} = \frac{12}{15} = \frac{3 \cdot 4}{3 \cdot 5} = \frac{4}{5}$

1.  $\frac{3}{4} \div \frac{9}{10} =$

2.  $1\frac{3}{4} \div \frac{7}{8} =$

3.  $152 \div \frac{3}{4} =$

4.  $2\frac{3}{4} \div 1\frac{1}{3} =$

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## Adding/Subtracting Fractions

**Find the Least Common Denominator.** To add or subtract fractions they first must have the same denominator, aka the Least Common Denominator (LCD). The LCD is the least value number that can be evenly divided by all denominators. Convert all denominators to the same value by individually multiplying both numerator and denominator by the required value to arrive at the LCD. Then add/subtract numerators and place result over the LCD. Simplify if possible. If one of the numbers is a whole number or a mixed number, convert it to a fraction.

Example      $\frac{2}{3} + \frac{1}{6} + \frac{1}{2} =$              LCD = 6      $\frac{2 \cdot 2}{3 \cdot 2} + \frac{1}{6} + \frac{1 \cdot 3}{2 \cdot 3} =$

$$\frac{4}{6} + \frac{1}{6} + \frac{3}{6} = \frac{8}{6} = 1\frac{2}{6} = 1\frac{1}{3}$$

1.      $\frac{3}{4} + \frac{1}{2} + \frac{3}{8} =$

2.      $1\frac{3}{4} - \frac{5}{14} =$

3.      $2\frac{3}{4} - 1\frac{1}{6} =$

4.      $\frac{3}{5} + \frac{1}{2} + \frac{1}{3} =$

*You must show your work. If it looks like you used a calculator, you will not get credit.*

## Multiplying/Dividing by Powers of 10

**Move the decimal.** To multiply or divide by powers of 10 (that is 10; 100; 1,000; etc) simply move the decimal the same number of places that there are zeros, that is, 1 for 10; 2 for 100; 3 for 1,000; etc). The decimal is moved to the right when multiplying and moved to the left when dividing. Finally, to convert a decimal to a percent or a percent to a decimal is multiplying or dividing by 100 (move the decimal point 2 places), respectively.

Examples  $1.23456 \times 1,000$  - three zeros means move 3 to right  $1234.56$

$234.54 \div 10,000$  - four zeros means move 4 to left  $.023454$

$$.234 = 23.4\%$$

$$4.5\% = .045$$

1. Multiply by 10: a. .885 \_\_\_\_\_ b. 116.3 \_\_\_\_\_  
 Multiply by 100: c. 0.421 \_\_\_\_\_ d. 11.8 \_\_\_\_\_  
 Divide by 100 e. 14.5 \_\_\_\_\_ f. 18 \_\_\_\_\_  
 Divide by 1,000: g. 5,274 \_\_\_\_\_ h. 89 \_\_\_\_\_

2. Change each percent to a decimal.

a. 43% \_\_\_\_\_ b. 1.5% \_\_\_\_\_ c. 225% \_\_\_\_\_

3. Write each decimal as a percent.

a. 21.35 \_\_\_\_\_ b. 0.2 \_\_\_\_\_ c. 3.145 \_\_\_\_\_

## Converting fractions to Decimals

***Divide by the Denominator.*** To convert a fraction to a decimal, divide the numerator by the denominator. Place a decimal after the numerator and add the number of zeros needed to round to the proper place.

Examples Convert  $\frac{3}{8}$  to a decimal to the nearest hundredth.

$$\begin{array}{r}
 \phantom{8} \overline{) 3.000} \\
 \underline{24} \phantom{0} \\
 60 \phantom{0} \\
 \underline{56} \phantom{0} \\
 40 \\
 \underline{40} \\
 0
 \end{array}$$

.375 rounds to .38

*Convert to a decimal to the nearest thousandth*

1.  $\frac{5}{8}$

2.  $\frac{5}{14}$

3.  $\frac{1}{6}$

4.  $\frac{3}{5}$

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## Problem Solving

***Translate words into algebraic equations.*** To solve a word problem you must convert the words of the problem into algebraic equations. First you must assign a variable to the unknown(s) and then write the equation(s) to solve for the solution(s). Once you have calculated your solutions check your answer to see if it is algebraically correct. Then check to see if the answer meets all the criteria of the problem.

**Example** The sum of three consecutive even integers is 60. Find the integers.

The numbers are	$x$ $x + 2$ $x + 4$	Sum means addition $x + x + 2 + x + 4 = 60$ $3x + 6 = 60$ $3x = 54$ $x = 18$
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The numbers are 18, 20, and 22.

1. The sum of a number and three times the next even number is 62. Find the integers.
  
  
  
  
  
  
  
2. Universal stock sells for \$17 a share. ABC Stock Brokers charge a flat fee of \$40 per transaction. How many shares can be bought for \$730?
  
  
  
  
  
  
  
3. A football field has a perimeter of 1,040 feet. If the field is 120 yards long, what is the width?
  
  
  
  
  
  
  
4. If there are twice as many girls as boys in 4<sup>th</sup> period Consumer Math and there are 24 in all, how many boys are in 4<sup>th</sup> period Consumer Math?

5. Kirk earns \$12.75 per hour. Last week, he worked 4 hours on Monday, 5 hours on Tuesday,  $4\frac{1}{2}$  on Wednesday,  $5\frac{1}{4}$  on Thursday, and 4 hours on Friday. How much did Kirk earn last week?
  
6. Amber started working on Tuesday at 8:15 AM. She worked until 4:55 PM taking a one hour lunch break. How many hours did she work on Tuesday?
  
7. Sally's checking account had a balance of \$1,423.65. During the week she had written checks of \$14.99, and \$87.63. She also had a \$27.55 deposit and 2 ATM charges of \$1.75 each. The bank also has a \$4.95 monthly service charge. The account also earned \$.27 in interest. What is her new balance?
  
8. Mary sold 8 pumpkins for \$2.75 each, 9 for \$2.00 each, 24 for \$1.50 each, and 15 for \$1.00 each. She receives \$.35 for each pumpkin sold plus a \$10.00 bonus if her sales total \$75.00 or more. How much did she earn?