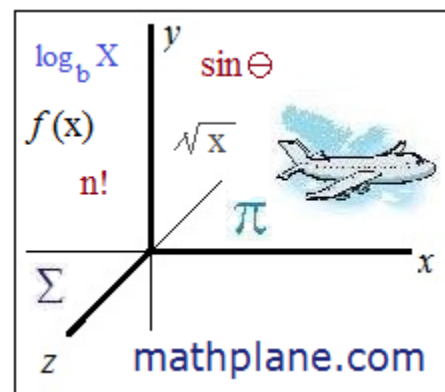


# Pre-Algebra Review 2

## Test and Solutions

*Topics include decimals, fractions, percentages, word problems, inequalities, and more.*



Pre-Algebra Review: Decimals, Percentages, Fractions

Part I: Decimals

a) For each pair, indicate  $<$  or  $>$

$$.72 \underline{\hspace{1cm}} .702$$

$$.6 \underline{\hspace{1cm}} .63$$

$$.123 \underline{\hspace{1cm}} .34$$

$$26.7 \underline{\hspace{1cm}} 8.88$$

$$.2323 \underline{\hspace{1cm}} .323$$

$$.0006 \underline{\hspace{1cm}} .006$$

b) Arrange in descending order (greatest to least)

Group 1

34.2

.345

1.63

0.45

12.5

Group 2

1.01

.001

10.1

.010

.101

Group 3

.06

.006

6.06

6.0006

.6

c) Addition/Subtraction

$$\begin{array}{r} 6.345 \\ + 0.470 \\ \hline \end{array}$$

$$\begin{array}{r} 81.32 \\ + 6.04 \\ \hline \end{array}$$

$$\begin{array}{r} 18.10 \\ + 212.12 \\ \hline \end{array}$$

$$3.006 + 2.4 =$$

$$4.44 + 4.044 =$$

$$.06 + .006 =$$

$$\begin{array}{r} 23.45 \\ - 8.67 \\ \hline \end{array}$$

$$\begin{array}{r} 14.12 \\ - .98 \\ \hline \end{array}$$

$$12.63 - 4.47 =$$

$$22.34 - 1.277 =$$

d) Multiplication/Division

$$\begin{array}{r} 1.6 \\ \times 3.8 \\ \hline \end{array}$$

$$\begin{array}{r} .444 \\ \times 5.5 \\ \hline \end{array}$$

$$\begin{array}{r} 1.6 \\ \times .038 \\ \hline \end{array}$$

$$(22) \times (.8) =$$

$$(8.6) \times (0.9) \times (1.77) =$$

$$3 \overline{) 12.36}$$

$$.02 \overline{) 50}$$

$$.08 \overline{) .776}$$

$$11.06 \div 7 =$$

$$.00868 \div 4 =$$

Part II: Fractions

a) 20% of 300 is ?

74% of 210 is ?

2% of 1234 is ?

b)  $\frac{1}{2}$  of 186 is ?

$\frac{4}{5}$  of 160 is ?

$\frac{3}{7}$  of 21.4 is ?

c)  $\frac{22}{50} = \underline{\hspace{2cm}} \%$

$\frac{3}{5} = \underline{\hspace{2cm}} \%$

$\frac{4}{9} = \underline{\hspace{2cm}} \%$

$\frac{120}{40} = \underline{\hspace{2cm}} \%$

$\frac{2}{1000} = \underline{\hspace{2cm}} \%$

Part III: Word Problems

a) The price of a shirt is \$37. If sales tax is an additional 10%, how much does the shirt cost?

b) A CD is \$15.95. If you got a 20% discount, how much did you pay?

c) A \$200 VCR was marked down to \$166. What percentage discount was being offered?

d) If your \$1000 investment lost 20% last year, how much did you lose?  
What percentage must your investment increase next year to reach \$1000 again?

Mixed Numbers and Decimals: Multiplication/Division

Part I: Mixed Number Multiplication and Division

1)  $3\frac{1}{4} \cdot 2\frac{3}{8} =$

2)  $-7\frac{2}{9} \cdot 4\frac{1}{3} =$

3)  $5 \cdot 3\frac{4}{7} =$

4)  $-6\frac{1}{2} \cdot \left(-6\frac{1}{2}\right) =$

5)  $4\frac{1}{2} \div 2\frac{5}{7} =$

6)  $-8\frac{3}{5} \div 3\frac{2}{5} =$

7)  $4 \div 1\frac{5}{9} =$

Part II: Decimals Multiplication and Division

1) 
$$\begin{array}{r} .23 \\ \times .6 \\ \hline \end{array}$$

2) 
$$\begin{array}{r} .41 \\ \times .05 \\ \hline \end{array}$$

3) 
$$\begin{array}{r} .63 \\ \times 1.1 \\ \hline \end{array}$$

4)  $2.2 \times 35.11 =$

5)  $6.3 \div .3 =$

6)  $12.4 \div .02 =$

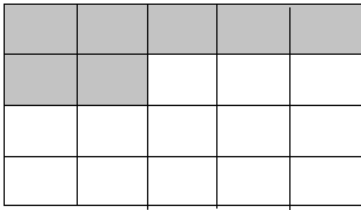
7)  $.5 \overline{) .075}$

Pre-Algebra Review Topics

1) 19 percent of a number is what fraction of that number?

2)  $\frac{2}{7}$  of 49 is how much?

3) Express the shaded region as a fraction, decimal, and percentage.



Fraction \_\_\_\_\_

Decimal \_\_\_\_\_

Percentage \_\_\_\_\_

4) Speed reader can read 6 pages in 90 seconds. Complete the table below.

Time (minutes)	1.5		4	10
Pages	6	12		

5) School enrollment is the following:

Freshmen: 44
Sophomores: 37
Juniors: 59
Seniors: 60

a) What percentage of the students are Seniors?

b) At the school, the ratio of males to females is 2:3.  
How many females are enrolled at the school?

Pre-Algebra Review Topics

6) Evaluate the following. (Write the fractions in lowest terms.)

a)  $7 * 3\frac{2}{5}$

b)  $4\frac{3}{20} + 15\frac{7}{10}$

c)  $\frac{1}{8} * \frac{6}{5} * \frac{3}{7} \div \frac{9}{10} \div \frac{12}{11} * \frac{8}{7}$

7) Store A sells 5 pounds of apples for \$4.40.  
Store B sells 4 pounds of apples for \$3.60.

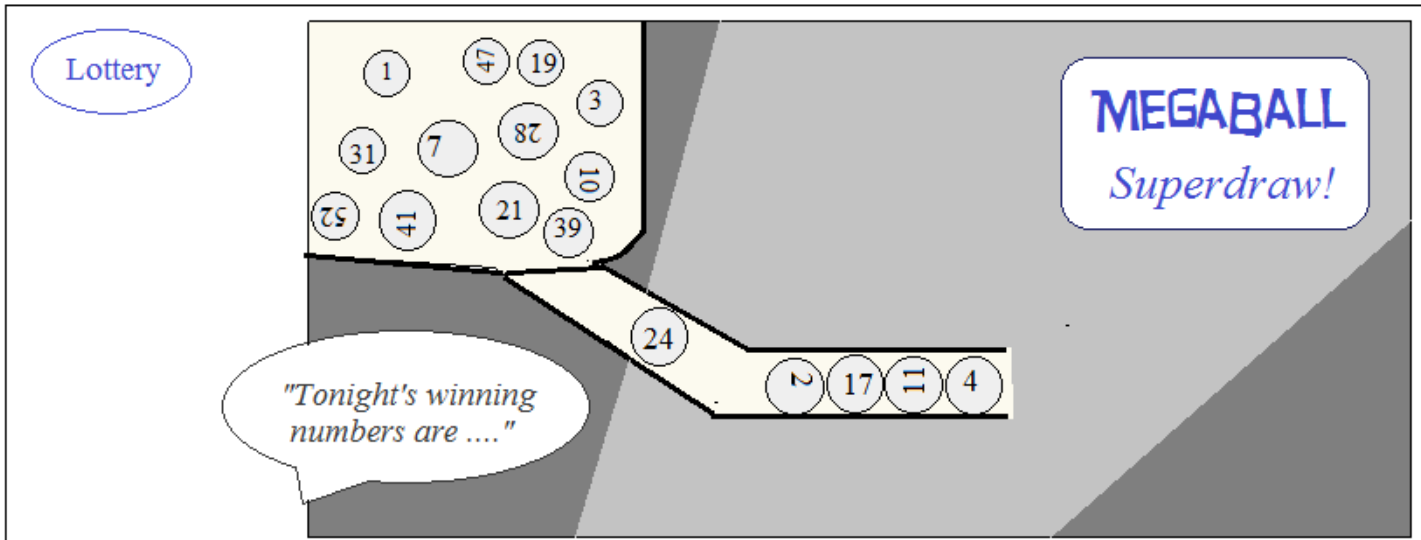
Which store has a better deal?

8)  $3 + 4 * 6 - 9 =$

9) Insert parenthesis to create a proper equation:

a)  $6 + 10 - 2 - 1 = 15$

b)  $4 * 2 + 1 + 6 = 18$





## Part I: Decimals

a) For each pair, indicate  $<$  or  $>$ 

$.72 > .702$

$.6 < .63$

$.123 < .34$

$26.7 > 8.88$

$.2323 < .323$

$.0006 < .006$

b) Arrange in descending order (greatest to least)

Group 1

34.2	34.2
.345	12.5
1.63	1.63
0.45	0.45
12.5	0.345

Group 2

1.01	10.1
.001	1.01
10.1	.101
.010	.010
.101	.001

Group 3

.06	6.06
.006	6.0006
6.06	.6
6.0006	.06
.6	.006

c) Addition/Subtraction

$$\begin{array}{r} 6.345 \\ + 0.470 \\ \hline 6.815 \end{array}$$

$$\begin{array}{r} 81.32 \\ + 6.04 \\ \hline 87.36 \end{array}$$

$$\begin{array}{r} 18.10 \\ + 212.12 \\ \hline 230.22 \end{array}$$

$3.006 + 2.4 = 5.406$

$$4.44 + 4.044 = \begin{array}{r} 4.440 \\ + 4.044 \\ \hline 8.484 \end{array}$$

$$.06 + .006 = \begin{array}{r} .060 \\ + .006 \\ \hline .066 \end{array}$$

$$12.63 - 4.47 = \begin{array}{r} 12.63 \\ - 4.47 \\ \hline 8.16 \end{array}$$

$$22.34 - 1.277 = \begin{array}{r} 22.340 \\ - 1.277 \\ \hline 21.063 \end{array}$$

$$\begin{array}{r} 23.45 \\ - 8.67 \\ \hline 14.78 \end{array}$$

$$\begin{array}{r} 14.12 \\ - .98 \\ \hline 13.14 \end{array}$$

d) Multiplication/Division

SOLUTIONS

$$\begin{array}{r} 1.6 \\ \times 3.8 \\ \hline 128 \\ + 480 \\ \hline 608 \\ \downarrow \text{(move 2} \\ \text{places)} \\ 6.08 \end{array}$$

$$\begin{array}{r} .444 \text{ 3 decimal} \\ \times 5.5 \text{ 1 decimal} \\ \hline 2220 \\ + 22200 \\ \hline 24420 \\ \downarrow \text{(move 4} \\ \text{decimal} \\ \text{places)} \\ 2.4420 \end{array}$$

$$\begin{array}{r} 1.6 \\ \times .038 \\ \hline 128 \\ 480 \\ + 0 \\ \hline 608 \\ \downarrow \\ .0608 \end{array}$$

$$(22) \times (.8) = 17.6$$

$$(8.6) \times (0.9) \times (1.77) = \begin{array}{r} 8.6 \\ \times .9 \\ \hline 7.74 \\ \times 1.77 \\ \hline 13.6998 \end{array}$$

$$\begin{array}{r} 4.12 \\ 3 \overline{) 12.36} \\ \underline{-12} \\ 0.3 \\ \underline{-3} \\ 06 \\ \underline{-6} \\ 0 \end{array}$$

$$\begin{array}{r} .02 \overline{) 50} \\ \hline \end{array}$$

move decimals over  
2 places; then,  
divide 5000 by 2..

$$5000/2 = 2500 = 50/.02$$

$$\begin{array}{r} 9.7 \\ .08 \overline{) .776} \\ \hline \end{array}$$

to check,  
multiply  
 $9.7 \times .08$   
 $= .776$

$$11.06 \div 7 =$$

$$\begin{array}{r} 1.58 \\ 7 \overline{) 11.06} \\ \underline{-7} \\ 4.0 \\ \underline{-3.5} \\ .56 \\ \underline{-.56} \\ 0 \end{array}$$

$$\begin{array}{r} .00868 \div 4 = \\ \underline{00217} \\ 4 \overline{) .00868} \\ \underline{.008} \\ 06 \\ \underline{-4} \\ 28 \\ \underline{-28} \\ 0 \end{array}$$

Part II: Fractions

a) 20% of 300 is ?  $.20 \times 300 = 60$

74% of 210 is ?  $.74 \times 210 = 155.40$

2% of 1234 is ?  $.02 \times 1234 = 24.68$

b)  $\frac{1}{2}$  of 186 is ?  $\frac{1}{2} \times 186 = 93$  or,  $1/2 = 50\% \rightarrow .50 \times 186 = 93$

$\frac{4}{5}$  of 160 is ?  $\frac{4}{5} \times 160 = 128$  or,  $4/5 = 80\% \rightarrow .80 \times 160 = 128$

$\frac{3}{7}$  of 21.4 is ?  $\frac{3}{7} \times 21.4 = \frac{64.2}{7} \cong 9.17$

SOLUTIONS

c)  $\frac{22}{50} = \frac{44}{100} = 44\%$       $\frac{22}{50} = \frac{44}{100}$

$\frac{3}{5} = \frac{60}{100} = 60\%$       $\frac{3}{5} = \frac{60}{100}$

$\frac{4}{9} = 44.\overline{44}\%$

(a vinculum bar means the number repeats indefinitely)

$$\begin{array}{r}
 .4444 \\
 9 \overline{) 4.00000} \\
 \underline{-3.6} \phantom{0} \\
 40 \\
 \underline{-36} \phantom{0} \\
 40 \\
 \underline{-36} \phantom{0} \\
 4...
 \end{array}$$

$\frac{120}{40} = 300\%$

$\frac{120}{40} = \frac{x}{100}$

$x = 300$

$\frac{2}{1000} = .2\%$

$\frac{2}{1000} = \frac{.2}{100}$

Part III: Word Problems

- a) The price of a shirt is \$37. If sales tax is an additional 10%, how much does the shirt cost?

10% of \$37 is \$3.70... therefore, the shirt

cost  $\$37.00 + \$3.70 = \$40.70$

- b) A CD is \$15.95. If you got a 20% discount, how much did you pay?

20% of \$15.95 is  $.20 \times \$15.95 = \$3.19$

therefore, you paid  $\$15.95 - \$3.19 = \$12.76$

- c) A \$200 VCR was marked down to \$166. What percentage discount was being offered?

$\frac{34}{200} = \frac{17}{100}$

The markdown was  $200 - 166 = \$34..$

\$34 is 17% of \$200... the discount is 17%

- d) If your \$1000 investment lost 20% last year, how much did you lose? What percentage must your investment increase next year to reach \$1000 again?

20% of 1000 is 200... You lost \$200...

Now, you have \$800.... For your investment to go back up to \$1000, you need to increase 800 to 1000...

To add 200 to 800, your investment must go up 25%!!!

Mixed Numbers and Decimals: Multiplication/Division

SOLUTIONS

Part I: Mixed Number Multiplication and Division

(\*\* Method: convert to improper fractions. Then, solve.)

$$1) 3\frac{1}{4} \cdot 2\frac{3}{8} =$$

$$\frac{13}{4} \cdot \frac{19}{8} =$$

$$\frac{247}{32} \text{ or } 7\frac{23}{32}$$

$$2) -7\frac{2}{9} \cdot 4\frac{1}{3} =$$

$$-\frac{65}{9} \cdot \frac{13}{3} =$$

$$-\frac{845}{27} \text{ or } -31\frac{8}{27}$$

$$3) 5 \cdot 3\frac{4}{7} =$$

$$\frac{5}{1} \cdot \frac{25}{7} =$$

$$\frac{125}{7} \text{ or } 17\frac{6}{7}$$

$$4) -6\frac{1}{2} \cdot \left(-6\frac{1}{2}\right) =$$

$$-\frac{13}{2} \cdot -\frac{13}{2} =$$

$$\frac{169}{4} \text{ or } 42\frac{1}{4}$$

$$5) 4\frac{1}{2} \div 2\frac{5}{7} =$$

$$\frac{9}{2} \div \frac{19}{7} =$$

$$\frac{9}{2} \cdot \frac{7}{19} =$$

$$\frac{63}{38} \text{ or } 1\frac{25}{38}$$

$$6) -8\frac{3}{5} \div 3\frac{2}{5} =$$

$$-\frac{43}{5} \div \frac{17}{5} =$$

$$-\frac{43}{5} \cdot \frac{5}{17} =$$

$$-\frac{43}{17} \text{ or } -2\frac{9}{17}$$

$$7) 4 \div 1\frac{5}{9} =$$

$$\frac{4}{1} \div \frac{14}{9} =$$

$$2 \frac{4}{1} \cdot \frac{9}{14} =$$

$$\frac{18}{7} \text{ or } 2\frac{4}{7}$$

Part II: Decimals Multiplication and Division

$$1) \begin{array}{r} .23 \text{ (2 decimal places)} \\ \times .6 \text{ (1 decimal place)} \\ \hline 138 \end{array} \text{ (3 total decimal places)}$$

$$.138$$

$$2) \begin{array}{r} .41 \text{ (2 decimal places)} \\ \times .05 \text{ (2 decimal places)} \\ \hline 205 \\ + 000 \\ \hline 205 \end{array} \text{ (4 total decimal places)}$$

$$.0205$$

$$3) \begin{array}{r} .63 \text{ (2 places)} \\ \times 1.1 \text{ (1 place)} \\ \hline 63 \\ + 630 \\ \hline 693 \end{array} \text{ (3 total places)}$$

$$.693$$

$$4) \begin{array}{r} 2.2 \times 35.11 = \\ \begin{array}{r} 35.11 \text{ (2 places)} \\ \times 2.2 \text{ (1 place)} \\ \hline 7022 \text{ (3 places)} \\ + 70220 \\ \hline 77242 \end{array} \end{array}$$

$$77.242$$

Since  $2 \times 35 = 70$ , this answer seems reasonable. (the decimal is properly placed)

$$5) 6.3 \div .3 =$$

move each decimal one place to the right:

$$63 \div 3 = 21$$

quick check:

$$21 \times .3 = 6.3$$

$$6) 12.4 \div .02 =$$

move each decimal 2 places to the right:

$$1240 \div 2 = 620$$

quick check:

$$620 \times .02 = 12.40$$

$$7)$$

$$.5 \overline{) .075}$$

$$.75 \div 5 = .15$$

Pre-Algebra Review Topics

SOLUTIONS

1) 19 percent of a number is what fraction of that number?

19 "per cent" ----> 19 per hundred

$$\frac{19}{100}$$

2) 2/7 of 49 is how much?

$$\frac{\text{"part"}}{\text{"whole"}} \Rightarrow \frac{2}{7} = \frac{?}{49}$$

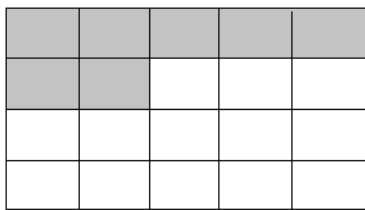
$$\frac{2}{7} = \frac{?}{49}$$

x7

x7

14

3) Express the shaded region as a fraction, decimal, and percentage.



Fraction  $\frac{7}{20}$

Decimal  $.35$

Percentage  $35\%$

$$\begin{array}{r} .35 \\ 20 \overline{) 7.000} \\ \underline{- 6.0} \\ 1.00 \\ \underline{- 1.00} \\ 0 \end{array}$$

$$\frac{7}{20} \Rightarrow \frac{35}{100} \quad 35 \text{ "per hundred"}$$

4) Speed reader can read 6 pages in 90 seconds. Complete the table below.

Time (minutes)	1.5	3	4	10
Pages	6	12	16	40

$$\frac{\text{time}}{\text{pages}} = \frac{1.5}{6} = \frac{3}{12}$$

x2

x2

$$\frac{\text{time}}{\text{pages}} = \frac{1.5}{6} \quad \times 4$$

$$\frac{4}{16} \quad \times 4$$

unit value is  $\frac{1}{4} \Rightarrow \frac{10}{40}$

5) School enrollment is the following:

Freshmen: 44
Sophomores: 37
Juniors: 59
Seniors: 60

$$\frac{\text{"Part"}}{\text{"Whole"}} = \frac{60}{44 + 37 + 59 + 60} = \frac{60}{200}$$

"percentage" ----> "per hundred" ---->  $\frac{?}{100} = \frac{60}{200}$

a) What percentage of the students are Seniors?

30 per hundred ---->  $30\%$

b) At the school, the ratio of males to females is 2:3. How many females are enrolled at the school?

$$\frac{\text{males}}{\text{females}} \Rightarrow \frac{2}{3} \Rightarrow \frac{200 - \text{females}}{\text{females}}$$

80 males

also,  $\frac{\text{females}}{\text{all students}} \Rightarrow \frac{3}{5} = \frac{?}{200}$

x40

120 females

6) Evaluate the following. (Write the fractions in lowest terms.)

a)  $7 * 3\frac{2}{5}$        $\frac{7}{1} \times \frac{17}{5} = \frac{119}{5}$  or  $23\frac{4}{5}$

b)  $4\frac{3}{20} + 15\frac{7}{10}$        $4 + 15 = 19$   
 $\frac{3}{20} + \frac{7}{10} = \frac{17}{20}$        $19\frac{17}{20}$

c)  $\frac{1}{8} * \frac{6}{5} * \frac{3}{7} \div \frac{9}{10} \div \frac{12}{11} * \frac{8}{7}$       flip the division parts       $\frac{1}{8} * \frac{6}{5} * \frac{3}{7} * \frac{10}{9} * \frac{11}{12} * \frac{8}{7}$

cross cancel       $\frac{1}{8} * \frac{6}{5} * \frac{3}{7} * \frac{10}{9} * \frac{11}{12} * \frac{8}{7}$

simplify       $\frac{22}{294} = \frac{11}{147}$

7) Store A sells 5 pounds of apples for \$4.40.  
 Store B sells 4 pounds of apples for \$3.60.

Which store has a better deal?

Store A:  $\frac{4.40}{5 \text{ lbs}} = .88 / \text{lb}$

Store B:  $\frac{3.60}{4 \text{ lbs}} = .90 / \text{lb}$

Store A offers a better deal!

8)  $3 + 4 * 6 - 9 =$        $3 + 4 * 6 - 9$

Use order of operations (PEMDAS)

$3 + 24 - 9$   
 $27 - 9 = 18$

9) Insert parenthesis to create a proper equation:

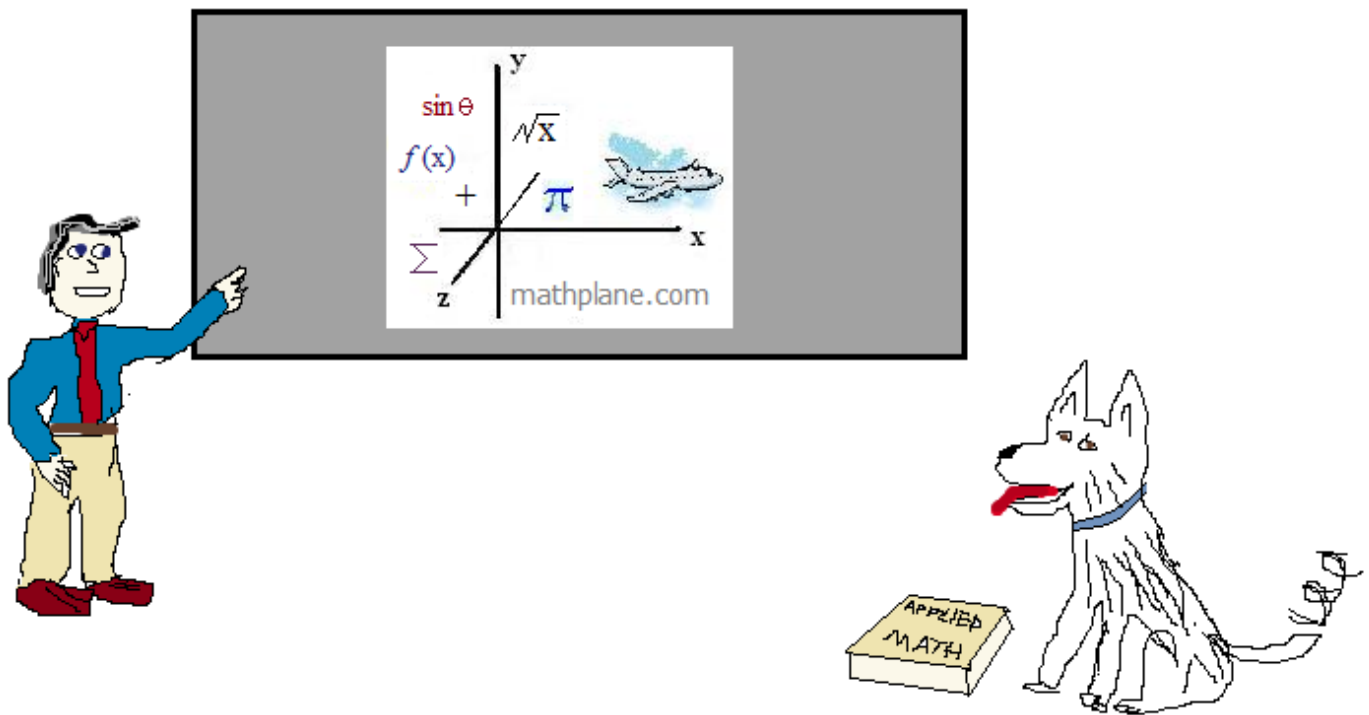
a)  $6 + 10 - (2 - 1) = 15$        $16 - 1 = 15$

b)  $4 * (2 + 1) + 6 = 18$        $4 \times 3 + 6 =$   
 $12 + 6 = 18$

Thanks for visiting. (Hope it helped!)

Check out more Pre-Algebra and math content at the site. If you have questions, suggestions, or requests, let us know.

Enjoy



Also, we have a store at TeachersPayTeachers

And,  $\text{mathplane.ORG}$  for tablet and mobile