Math 0106

Basic Mathematics



In Class Worksheets

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# Geometric Formulas

**SOLID GEOMETRY**

**Rectangular Solid**

*Volume:V = lwh*

*SA = 2lw+2wh+2lh*

**Cube**

*Volume:V* = *s*3

*SA = 6s*2

**Right Circular Cylinder**

*Volume:V* = π*r*2*h*

*SA =2*π*r*2 + 2π*rh*

**Right Circular Cone**

*Volume:V* = 1/3π*r*2*h*

SA *= πr*2*+ πrh*

**Sphere**

*Volume:*

*V* = 4/3π*r*3

*SA =* 4π*r*

 = 

**PLANE GEOMETRY**

**Rectangle**

*Area:A = lw*

*Perimeter:P* = 2*l* + 2*w*

**Square**

*Area:A = s*2

*Perimeter:P* = 4*s*

**Triangle**

*Area:*



**Sum of Angle Measures**

A + B + C = 180o

**Right Triangle**

Pythagorean Theorem:

*a*2 + *b*2 = *c*2

**Parallelogram**

*Area:A = bh*

**Trapezoid**

*Area:A* = 1/2*h*(*a+b*)

**Circle**

*Area:A* = π*r*2

*Circumference:*

*C* = π*d* or*C* = 2π*r*

π.=22/7 or π.=3.14

*s*

*s*

*l*

*w*

*d*

*r*

*h*

*a*

*b*

*h*

*b*

*c*

*b*

*a*

C

B

A

*b*

*h*

*h*

*r*

*r*

*h*

*r*

*h*

*s*

*s*

*s*

*w*

*l*

# Algebraic Formulas

Interest Formula: 

Compound Interest Formula: 

Percent Formulas: 

Percent Increase/Decrease 

Slope Formula 

To find the *x*-intercept of a line, complete the ordered pair (\_\_\_, 0).

To find the *y*-intercept of a line, complete the ordered pair (0, \_\_\_).

Slope-Intercept Form of an Equation of a Straight Line: 

Point-Slope Form of an Equation of a Straight Line: 

Distance Formula: 

Quadratic Formula: If  then 

# Statistical Formulas

Permutation of *n* things taken *r* at a time 

Combination of *n* things taken *r* at a time 

Theoretical Probability 

Empirical Probability 

Mean = 

Mean of a Frequency Distribution = 

Midrange 

Standard Deviation 

*z*−score 

# Syllabus Quiz

Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1) What is the course instructor’s office phone number?

2) On what day(s) and time(s) are office hours held?

3) What is the attendance policy for the course?

4) What overall percentage will result in a C grade for the semester?

5) True or False? For any false statement, please correct the statement.

a) Attendance is crucial for success in this course.

b) You will complete the entire midterm and the entire final exam in class.

c) Late assignments can be handed in up to three weeks after the due date.

d) Any student who attends class, takes good notes, completes assignments, and studies outside of class should receive a good grade in this course.

6) What are the criteria for receiving maximum points for participation?

7) Homework assignments account for what portion of your final grade?

8) When are the tests scheduled for this class?

# Student Information Sheet

**Personal**

Full name:

Current address:

Contact information (please complete at least one):

Home phone:

Cell phone:

Email:

Other:

Do you work?

(yes / no)

If yes: full-time orpart-time?

How manyhours?

Are there other outside obligations you would like for me to know about?

**Academic**

What is your major?(put “undeclared” if relevant):

Where did you go to high school?

What year did you graduatefrom high school?

Do you plan to transfer from this college? circle one: Yes / No

If yes, where do you plan to transfer?

What other colleges (if any)have you attended?

**Course Specific**

Have you taken a math course at the community college level?

When was the last time you took a math course?

What course was it?

Where did you take this course?

What is your level of comfort with math? 1 2 3 4 5 6 7 8 9 10

 Not comfortable Very comfortable

List the courses you are enrolled in this semester

Whatgrade do you intend to earn in this course?

What strengths or assets do you have that will help you achieve your goal in thiscourse? These strengths/assets can include things about you such as being a hardworker or things about your life such as having a supportive family or having a flexible work schedule.



# Multiples and Divisibility

A **multiple** of a number is a product of that number and an integer.

 Multiples of 5 are 5, 10, 15, 20, 25, … Multiples of 3 are 3, 6, 9,12, 15, 18, 21, …

Find the first four multiples of each number.

1. 
2. 
3. 
4. 
5. 
6. 

A number is **divisible** by another number if it is a multiple of that number.

 45 is divisible by 5 since 45 is a multiple of 5 (45 = 9 ⋅ 5) and

 20 is divisible by 4 since 20 is a multiple of 4 (20 = 5 ⋅ 4).

Saying that 20 is divisible by 4 also means that 20÷4 results in a remainder of zero. When this happens, we sometimes say that 4 divides 20 evenly.

**Divisibility Rules**

Knowing the divisibility rules for common numbers will save you time when determining if one number is divisible by another number. Let’s look at the divisibility rules for 2, 3, 5, 6, 9, and 10.

**Divisibility by 2:** A number is divisible by 2 if it has a one’s digit of 0, 2, 4, 6, or 8. Every even number is divisible by 2.

*Example:* Which of the following numbers is divisible by 2? 945 3488 3200

*Solutions:*

945 is NOT divisible by 2, because the last digit is odd.

3488 is divisible by 2, because the last digit is even.

3200 is divisible by 2, because the last digit is even.

**Divisibility by 3:** A number is divisible by 3 if the sum of its digits is divisible by 3.

*Example:* Which of the following numbers is divisible by 3? 54 480 923

*Solutions:*

54 is divisible by 3, because the sum of the digits is 5 + 4 = 9 is divisible by 3. (9 ÷ 3 = 3)

480 is divisible by 3, because the sum of the digits is 4 + 8 + 0 = 12 is divisible by 3. (12 ÷ 3 = 3)

923 is NOT divisible by 3, because the sum of the digits is 9 + 2 + 3 = 14 is not divisible by 3.

**Divisibility by 5:** A number is divisible by 5 if its one’s digit is 0 or 5.

*Example:* Which of the following numbers is divisible by 5? 945 3,488 3,200

*Solutions:*

945is divisible by 5, because the last digit is 5.

3,488 is NOT divisible by 5, because the last digit is not 0 or 5.

3,200 is divisible by 5, because the last digit is 0.

**Divisibility by 6:** A number is divisible by 6 if its ones digit is 0, 2, 4, 6, or 8 (is even) and the sum of its digits is divisible by 3. In other words, a number is divisible by 6 if it is divisible by both 2 and 3.

*Example:*Which of the following numbers is divisible by 6? 945 3,488 4,200

*Solution:*

945 is NOT divisible by 6, because the last digit is odd. Thus, it is not divisible by 2.

3,488 is NOT divisible by 6, because the sum of the digits 3 + 4 + 8 + 8 = 23 is not divisible by 3. Although, it is divisible by 2.

4,200 is divisible by 6, because the last digit is even and the sum of the digits 4 + 2 + 0 + 0 = 6 is divisible by 3.

**Divisibility by 9:** A number is divisible by 9 if the sum of its digits is divisible by 9.

*Examples:* Which of the following numbers is divisible by 9? 945 3,488 3,200

*Solution:*

945 is divisible by 9, because the sum of the digits 9 + 4 + 5 = 18 is divisible by 9.

3,488 is NOT divisible by 9, because the sum of the digits 3 + 4 + 8 + 8 = 23 is not divisible by 9.

3,200 is NOT divisible by 9, because the sum of the digits 3 + 2 + 0 + 0 = 5 is not divisible by 9.

**Divisibility by 10:** A number is divisible by 10 if its ones digit is 0.

*Examples:* Which of the following numbers is divisible by 10? 945 3,488 3,200

*Solution:*

945is NOT divisible by 10, because the last digit is not 0.

3,488is NOT divisible by 10, because the last digit is not 0.

3,200is divisible by 10, because the last digit is 0.

Determine if each number is divisible by 2, 3, 5, 6, 9, or 10.

1. 34
2. 210
3. 280
4. 4386
5. 1473
6. 56,484

# Prime Factorization

A number c is a **factor** of a if a is divisible by c.

A **factorization** ofaexpresses a as a product of two or more numbers.

 Factors of 24 are 1, 2, 3, 4, 6, 8, 12, and 24. Factorizations of 24 are 1⋅24, 2⋅12, 3⋅8, and 4⋅6.

**Prime and Composite Numbers**

* A natural number that has exactly two factors, one and itself, is called a **prime number**.
* Any natural number, other than one, that is not prime, is **composite**.

Determine whether each number is prime, composite, or neither.

1. 8 2) 13 3) 24 4) 33 5) 89

**List of Primes from 2 to 100**

 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

**List of Primes from 2 to 100**

 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

**Prime Factorization**

Each composite number has a unique prime factorization.

The prime factorization of a number is the product of factors where each factor is a prime number.

*Example:* Give the prime factorization for 84 using prime factors.

 84 is divisible by 2: 84 = 2 ⋅ 42

 42 is divisible by 2: 84 = 2 ⋅ 2 ⋅ 21

 21 is divisible by 3: 84 = 2 ⋅ 2 ⋅ 3 ⋅ 7

 7 is prime. The prime factorization for 84 is 2 ⋅ 2 ⋅ 3 ⋅ 7 or 22⋅ 3 ⋅ 7

*Example:* Give the prime factorization for 300 using a factor tree. 300

 300 can be written as 10 ⋅ 30 10 ⋅ 30

 10 can be written as 2 ⋅ 5 and 30 can be written as 5 ⋅ 6 2 ⋅ 5 5 ⋅ 6

 2 and 5 are primes. Circle them. 2 ⋅ 3

 6 can be written as 2 ⋅ 3.

 2 and 3 are both primes. Circle them.

 The prime factorization is found by multiplying all circled prime numbers.

 300 = 22⋅ 3 ⋅ 52

# Prime Factorization − Practice

List all factors.

1) 25 2) 49 3) 7 4) 13



5) 24 6) 48 7) 168 8) 135

Determine whether each number is prime, composite, or neither.

9) 36 10) 40 11) 47 12) 31

13) 55 14) 57 15) 28 16) 13

Find the prime factorization of each number.

17) 25 18) 81 19) 45 20) 12



21) 189 22) 450 23) 242 24) 338

# Understanding Fractions

 **A fraction represents a part of a whole.**

 The circle is broken into 8 equal−sized portions. The shaded region represents 3 of the 8 regions.



Express each shaded region as a number in fraction form.

1) 

2)

3) 

4) 

5) 

6)

7)

8)

9)

10)

11)

12)

13) 

14)

15) 

16) 

17)

18)

19) 

20)

21) 

22) 



# Reducing Fractions

**To reduce fractions**, **cancel out the common denominator**

1



1

Simplify each of the following fractions by cancelling out the common factor.

1)  2) 

3)  4) 

5)  6) 

7)  8) 

9)  10) 

11)  12) 

13)  14) 

15)  16) 

17)  18) 

19)  20) 



# Multiplying Fractions

1



1

**It is much easier to multiply after reducing common factors.**

Multiply each of the following fractions by first cancelling out common factors.

1)  2) 

3)  4) 

5)  6) 

7)  8) [](http://sophia.hccs.edu/~douglas.bump/0306v/3.4.6/3.4.6.html)

9)  10) 

11)  12) 

13)  14) 

15)  16) 

17) Determine the area of a rectangle. 18) Determine the area of the triangle.

4 inches

4 cm

3/4 inch

10/3 cm

19) Give the area of the rectangular garden that measures 6 yards by yards.

20) Common Ground Catering anticipates 45 couples eating salmon at a year−end banquet. Allowing 2/3 pound of salmon per couple, how many pounds of salmon should be prepared?



# Dividing Fractions



**To divide fractions**, **multiply by the reciprocal.**

Rewrite each division using multiplication. Then complete the operation.

1)  2) 

3)  4) 

5)  6) 

7)  8) 

9)  10) 

11)  12) 

13)  14) 

15) How many sections of foot−long pipe can be cut from a pipe that is 20−feet long? How much pipe will be left over?

16) After her raise, Shannon earned more than she previously made. If Shannon’s weekly wages totaled $2100 after her raise, what was Shannon’s original weekly wage?



# Least Common Multiples

The **Least Common Multiple** of two or more numbers is the smallest number that is divisible by each of the given numbers.

**Using Listing to find the Least Common Multiple (LCM)**

Find the LCM of 4 and 6.

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, …

Multiples of 6: 6, 12, 18, 24, 30, 36

Common Multiples of 4 and 6 are 12, 24, 36, …

The LCM of 4 and 6 is 12.

**Using Prime Factorization to find the LCM.**

Find the LCM of 20 and 24.

The prime factorization of 20 is 22⋅ 5

The prime factorization of 24 is 23⋅ 3

To find the LCM, multiply the prime factors raised to the highest degree that it occurs in

using multiplication. Then complete the operation.

Find the least common multiple for each list of numbers.

1) 20, 30 2) 4, 6

3) 8, 12 4) 12, 20

5) 5, 7 6) 11, 13

7) 2, 3 8) 4, 10, 15

9) 6, 8, 10 10) 12, 20, 30

11) 8, 12, 20 12) 5, 7, 11

13) 2, 3, 5 14) 7, 13, 91

15) 2, 5, 10 16) 6, 12, 18

17) 20, 50, 45 18) 98, 50, 40

19) 4, 9, 36 20) 12, 75, 100



# Adding and Subtracting Fractions – Common Denominators

**To add fraction with common denominators:**

**(1) Add numerators,**

**(2) Place the sum over the common denominator,**

**(3) If possible, reduce.**





Add or subtract. Be sure to reduce your answers.

1)  2) 

3)  4) 

5)  6) 

7)  8) 

9)  10) 

11)  12) 

13)  14) 

15)  16) 

17)  18) 

19)  20) 



# Adding and Subtracting Fractions – Unlike Fractions

**To add unlike fractions:**

**(1) Rewrite each fraction using the same denominator,**

**(2) Add fractions,**

**(3) If possible, reduce.**



Add or subtract. Be sure to reduce your answers.

1)  2) 

3)  4) 

5)  6) 

7)  8) 

9)  10) 

11)  12) 

13)  14) 

15)  16) 

17)  18) 

19)  20) 



# Decimal Notation – Order and Rounding

**Write the word name for the number in the sentence.**

1) One gallon is equal to 3.7853 liters. 2) The sales tax rate in Houston is 8.25 percent.

**Convert Decimals to Fractions. Do not simplify.**

3) .572 4) 67.023



5) 0.00045 6) 9.875

**Convert Decimals to Mixed Numbers. Do not simplify.**

7) 43.7 8) 5.0123

**Convert Fractions to Decimals.**

9) $\frac{3}{100}$ 10) $\frac{103}{100}$

11) $\frac{137}{100000}$ 12) $\frac{123,067}{10,000}$

**Which number is greater? (Order of decimals)**

13) 67.89 and 67.98 14) 0.0342 and 0.04

15) 9.79 and 9.97 16) 0.00000045 and 0.00001

**Round the decimal number to the indicated place**



17) Round 72.3846 to the nearest hundredth. 18) Round 0.03445 to the nearest thousandth.

19) Round 19.97 to the nearest tenth. 20) Round 24.74 to the nearest one.



# Adding and Subtracting Decimals

**Add.**

1) $\begin{matrix} 231.074\\\overline{+ 12.637}\end{matrix}$ 2) $\begin{matrix} 2.1523\\\overline{+ 9.6237}\end{matrix}$



3) 56.314 + 17.78 4) 10.07 + 0.538

5) $\begin{matrix} 35.8\\ 319.725\\\overline{+ 53.614}\end{matrix}$ 6) $\begin{matrix} 15.4\\\begin{matrix} 512.615\\6427.5\end{matrix}\\\overline{+ 23.427}\end{matrix}$

**Subtract.**

7) $\begin{matrix} 46.974\\\overline{- 12.632}\end{matrix}$ 8) $\begin{matrix} 231.074\\\overline{- 12.637}\end{matrix}$

9) 40.05 – 0.71 10) 6.007 – 3.2



11) 456 – 2.467 12) 23 – 3.198

**Add or subtract, as indicated.**

13)6.72 + 1.62 14) 7.74 – 2.34

15) 35.6 + 47.12 16) 8.7 – 7.8



# Multiplying Decimals

**Multiply.**

1) $\begin{matrix} 6.4\\\overline{× 3}\end{matrix}$ 2) $\begin{matrix} 5.6\\\overline{× 0.4}\end{matrix}$

3) $\begin{matrix} 35.3\\\overline{× 0.05}\end{matrix}$ 4) $\begin{matrix} 5.026\\\overline{× 0.01}\end{matrix}$

5) $\begin{matrix} 123.3\\\overline{× 0.1}\end{matrix}$ 6) $\begin{matrix} 47.013\\\overline{× 100}\end{matrix}$

**Multiply.**

7) $2.3 ×1.12$ 8) $(4.32)(2.34)$

9) $2.037 ×10,000$ 10) $7421.3 ×0.001$

11) $\begin{matrix} 15.3\\\overline{× 142}\end{matrix}$ 12) $\begin{matrix} 0.326\\\overline{× 512}\end{matrix}$

**Convert dollars to cents.**

13)$\$19.43$ 14) $\$0.73$

**Convert cents to dollars.**

15) $58¢$ 16) $172¢$

**Find the area of a rectangular room with given dimensions.**

17) $7.2 ft wide, 12.5 ft long$ 18) $5.4 mwide, 6.6 m long$

**Simplify.**

19) $4.1+5 ×3.2 $ 20) $82.1-2.1(5.25+6.2×4.7) $



# Dividing Decimals

**Divide.**

1) $4 \overline{) 35}$ 2) $24 \overline{) 82.08}$

3) $2.6 \overline{) 104}$ 4) $2.7 \overline{) 129.6}$

5) $8.6 \overline{) 5.848}$ 6) $0.74 \overline{) 0.37}$

**Divide by 10, 100, 1000, 0.1, 0.01, or 0.001**

7) $\frac{35.8}{10}$ 8) $\frac{0.128}{1000}$

9) $\frac{43.9}{100}$ 10) $\frac{13.807}{.01}$

11) $\frac{45.3}{0.001}$ 12) $\frac{24.15}{0.1}$

**Simplify using order of operations.**

13)$2.3×\left(12.1+2.7\right)$ 14) $\left(3.4-1.3\right)×0.2$



15) $\left(5-0.06\right)÷2+3.42×0.1$ 16) $0.07+2.01÷0.1$

17) $5.4+0.32÷0.1^{2}$ 18) $(4.5-3.2)^{2}+7.4×0.2$

19) $2.1^{2}+1.2^{2}-3.5$ 20) $3.4-1.3×0.2$



# Using Fractional Notation with Decimal Notation

**Convert each fraction to a terminating decimal.**

1) $\frac{13}{4}$ 2) $\frac{3}{20}$ 3) $\frac{11}{40}$

4) $\frac{103}{10}$5) $\frac{1}{4}$ 6) $\frac{3}{24}$

**Convert each fraction to a repeating decimal.**

7) $\frac{2}{3}$ 8) $\frac{3}{11}$9) $\frac{8}{15}$

10) $\frac{15}{11}$11) $\frac{5}{6}$ 12) $\frac{8}{7}$

**Convert each fraction to a decimal and round as indicated.**

13)$\frac{8}{15}$ , round to the nearest thousandth 14)$\frac{13}{11}$, round to the nearest tenth

15) $\frac{3}{7}$ , round to the nearest hundredth 16) $\frac{12}{7}$, round the nearest ten thousandth

**Simplify and write the result as a decimal.**

17) $\frac{5}{8}\left(15.4\right)$ 18) $\frac{2}{3}\left(0.576\right)$

19) $\frac{1}{2}\left(10.6\right)+ \frac{3}{2}\left(7.4\right)$ 20) $\frac{3}{4}\left(0.058\right)+ \frac{6}{5}\left(7.83\right)$

# Ratio and Proportion

1. Write as a unit rate: 350 miles on 10 gallons of gas.
2. Find fraction notation for the ratio. Don’t simplify. 3$\frac{7}{8}$ to 6$\frac{1}{4}$.
3. Of a family's $815 weekly income, $125 usually goes toward groceries. What is the ratio of the amount spent on groceries to weekly income?
4. In the rectangle shown below, what is the ratio of length to width? Of width to length?



1. Find the rate, or speed, as a ratio of distance to time. 45m, 15 sec. Simplify
2. Find the ratio of the first number to the second and simplify. 8 to 18.
3. If Alison's company charged $ 197.94 for 6 hours of work, what rate did the company charge in dollars per hour?
4. Determine whether the two pairs of numbers are proportional.

24, 18 and 4, 3

1. Determine whether the two pairs of numbers are proportional.

 5$\frac{1}{5}$ , 6 and 2$\frac{3}{4}$ , 7 $\frac{1}{2}$

1. Solve : $\frac{x}{33}$ = $\frac{4}{11}$
2. Solve: $\frac{31}{186}$ = $\frac{14}{m}$
3. Solve: $\frac{\frac{1}{6}}{\frac{1}{2}}$ = $\frac{\frac{1}{2}}{x}$
4. Joan can mow a 6-acre field in 2 hr. How long would it take her to mow a 3-acre field?
5. Jim drove 168 mi in 4 hr. If he can keep the same pace, how long will it take him to drive 504 mi?
6. On a map of the Thunderbird Country Club golf course, 0.5 in. represents 45 yd. How long is the 7th hole if the map shows 3 in.?
7. In the rectangles below, the ratio of length to width is the same. Find the length of the larger rectangle.



1. On a test of 18 items, Charles got 15 correct. What is the ratio of the incorrect to the correct ones?
2. If 3 dozen eggs cost $6.27, how much will 2 dozen eggs cost?
3. To control a fever, a doctor suggests that a child who weighs 28 kg be given 320 mg of Tylenol. If the dosage is proportional to the child’s weight, how much Tylenol is recommended for a child who weighs 35 kg?
4. A leaky hose loses 35 gal of water in a week. What is the rate of gallons per day?



# Percent Notation

**Write each decimal as a percent.**

1. 0.00554
2. 0.119
3. The Swayed family saves 0.1217 of their income. Write this decimal as a percent

**Write each percent as a decimal.**

1. 35%
2. 0.39%
3. 170%

**Write each fraction or mixed number as a percent.**

1. $\frac{29}{50}$
2. $\frac{5}{12}$
3. $\frac{7}{15}$ Round to the nearest hundredth percent.

**Write each percent as a fraction or mixed number in simplest form.**

1. 10.276%
2. 185$\frac{5}{7}$ %
3. 16 $\frac{2}{3}$%

**Solve. Round decimals to the nearest thousandth and percents to the nearest tenth of a percent.**

1. Write the equivalent decimal and percent for$\frac{4}{75}$.
2. Write the equivalent fraction and percent for 0.12.
3. Write the equivalent fraction and decimal for 33$\frac{1}{3}$%.
4. 54% of 74 is what?
5. What is 14.4% of 86?
6. Give three kinds of notation for the percent: 24%
7. The pie chart gives the fraction of a company’s total yearly sales by employee.What percentage of yearly sales was attributed to Fred?
8. Complete the conversion table (Fraction/ Decimal/ Percent)

|  |  |  |
| --- | --- | --- |
| **Fraction** | **Decimal** | **Percent** |
| 3/8 | 1. ?
 | 1. ?
 |
| 1. ?
 | 0.65 | 1. ?
 |
| 1. ?
 | 1. ?
 | 13.5% |
| 4/9 | 1. ?
 | 1. ?
 |



# Solving Percent Problems and Applications

1. Translate to a percent equation. Then solve. What is 11% of 49?
2. Jennifer invests $10,000 at 7% simple interest. How much is in her account after 2 year?
3. Find the better buy (lower cost per ounce) by finding each unit price rounded to three decimal places, if necessary. Assume that different sizes of the same brand are being compared.

Shampoo:

 $6.72 for 12 ounces

 $9.90 for 18 ounces

1. A bag of fertilizer covers 2000 square feet of lawn. Find how many bags of fertilizer should be purchased to cover a rectangular lawn 110 feet by 140 feet.
2. A fire fighter needs to estimate the height of a burning building. She estimates the length of her shadow to be 8 feet long and the length of the building’s shadow to be 72 feet long. Find the height of the building if the fire fighter is 5 $\frac{1}{3}$ feet tall. Round to the nearest tenth if necessary.
3. In a survey of 100 people, 4 preferred relish on their hot dogs. What percent preferred relish?
4. A basketball player made 30 out of 100 attempted free throws. What percent of free throws was made?
5. 71 is 0.71% of what number?
6. 2 is what percent of 16?
7. An inspector found 12 defective cameras during an inspection. If this is 0.012% of the total number of cameras inspected, how many cameras were inspected?
8. What percent of 46 is 458?
9. At one point in 2004, a quarterback had completed 46.3% of his passes throughout his career. He had attempted 2206 passes. How many did he complete?
10. Last year, Maria earned $323 per week. This year, her salary increased to $345 per week. What is the percent of increase?
11. The sales tax rate in Houston is 8.255%. How much tax will be charged on a purchase of 3 chairs at $61 a piece? Round your answer to the nearest cent.
12. Find the missing value:

|  |  |  |  |
| --- | --- | --- | --- |
| Marked Price | Rate of Discount | Discount | Sale Price |
| $157 | 10% |  |  |

1. The Dow Jones Industrial Average (DJIA) plunged from 11,143 to 10,365 on September 29, 2009. This was the largest one-day drop in its history. What was the percent of decrease?
2. A kitchen table costs $230. The sales tax is $6.90. What is the sales tax rate and what is the total price paid?
3. 45$\frac{1}{5}$ % of 92 is what?
4. 21 is 6% of what?
5. If a flagpole 12 feet tall casts a shadow that is 16 feet long, find the length of the shadow cast by an antenna which is 30 feet tall. Round to the nearest tenth if necessary.



# Order of Operations

**P**arentheses

**E**xponents and Roots

**M**ultiplication &**D**ivision

**A**ddition &**S**ubtraction

Simplify each of the following expressions.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 
15. 
16. 
17. 
18. 
19. 
20. 
21. 
22. 

# Review of Order of Operations Worksheet

1) 14 – 2(3)

2) 3 + 4(5) –2

3) 16 − 32

4) 3(6 – 4) + 3 − 6

5) 2 ×32 – 4 ÷ [8 + 2(2)]

6) 32 – 22 – 22 + 32

7) 90 – 8 × 7 + 6 ÷( 5 – 4 + 3 − 2)

8) 

9) (2 + 3)2 – (16 – 42)

10) 2{10 – [14 – (8 – 3)]}

11) (102 – 1) – (10 – 1)2

12) 5 + 3[5(5) – 2]

# Getting Ready for Factoring Polynomials 1

 In Math 0409, you will learn how to factor polynomials. The key to being able to factor is to be able to find the relationship between two numbers: the product and the sum. This worksheet will help you to practice this concept. For each pair of numbers, give the product and the sum.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Product | Sum |  |  |  | Product | Sum |
| 3 | 11 | **33** | **14** |  | 2 | 10 |  |  |
| 9 | 3 |  |  |  | 12 | 11 |  |  |
| 10 | 3 |  |  |  | 6 | 5 |  |  |
| 4 | 7 |  |  |  | 11 | 1 |  |  |
| 10 | 12 |  |  |  | 10 | 10 |  |  |
| 7 | 9 |  |  |  | 2 | 11 |  |  |
| 4 | 10 |  |  |  | 7 | 2 |  |  |
| 5 | 6 |  |  |  | 2 | 8 |  |  |
| 7 | 3 |  |  |  | 9 | 6 |  |  |
| 5 | 8 |  |  |  | 10 | 8 |  |  |
| 2 | 6 |  |  |  | 4 | 1 |  |  |
| 5 | 9 |  |  |  | 11 | 1 |  |  |
| 5 | 2 |  |  |  | 8 | 2 |  |  |
| 5 | 7 |  |  |  | 8 | 7 |  |  |
| 3 | 9 |  |  |  | 9 | 5 |  |  |
| 3 | 0 |  |  |  | 6 | 3 |  |  |
| 10 | 12 |  |  |  | 9 | 1 |  |  |
| 9 | 9 |  |  |  | 11 | 8 |  |  |
| 12 | 9 |  |  |  | 12 | 5 |  |  |
| 12 | 4 |  |  |  | 4 | 3 |  |  |
| 10 | 11 |  |  |  | 6 | 0 |  |  |
| 2 | 12 |  |  |  | 5 | 2 |  |  |
| 5 | 12 |  |  |  | 7 | 12 |  |  |

# Getting Ready for Factoring Polynomials 2

 In order to factor polynomials, you need to be able to determine which two factors of a number will give a specific sum. This worksheet will help you to practice this concert. For each product and the sum, determine the pair of numbers.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Product | Sum | Pair of Numbers |  | Product | Sum | Pair of Numbers |
| 28 | 11 | **4, 7** |  | 60 | 16 |  |
| 110 | 21 | **10, 11** |  | 30 | 13 |  |
| 81 | 18 |  |  | 42 | 13 |  |
| 18 | 11 |  |  | 56 | 15 |  |
| 16 | 10 |  |  | 24 | 11 |  |
| 50 | 15 |  |  | 14 | 9 |  |
| 48 | 14 |  |  | 54 | 15 |  |
| 16 | 8 |  |  | 90 | 19 |  |
| 22 | 13 |  |  | 10 | 7 |  |
| 96 | 22 |  |  | 8 | 9 |  |
| 1 | 2 |  |  | 70 | 13 |  |
| 36 | 12 |  |  | 63 | 16 |  |
| 132 | 23 |  |  | 40 | 14 |  |
| 35 | 12 |  |  | 21 | 10 |  |
| 36 | 12 |  |  | 12 | 7 |  |
| 11 | 12 |  |  | 45 | 14 |  |
| 22 | 13 |  |  | 36 | 13 |  |
| 16 | 10 |  |  | 15 | 8 |  |
| 100 | 20 |  |  | 54 | 15 |  |
| 63 | 16 |  |  | 110 | 21 |  |
| 22 | 13 |  |  | 77 | 18 |  |
| 10 | 11 |  |  | 121 | 22 |  |
| 12 | 7 |  |  | 66 | 17 |  |
| 10 | 7 |  |  | 18 | 9 |  |