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Test Taking 101

As you begin to prepare for taking college tests, please know that having the right attitude can make a huge difference in the outcome. Here are a few tips to help you in the process:

1. Prepare properly for the exam. This might include reviewing your homework / review, studying in small blocks of time, or preparing with another student.
2. Get plenty of rest, eat before testing, and relax.
3. Use the allotted time wisely, try not to rush through calculations, and check over your work.
4. Learn the concepts, rather than memorizing.
5. Read the directions carefully, and then read each question carefully.
6. Do the questions you understand first, and if you come to one you are not sure of the answer, come back to that question.
7. If there are formulas or facts you want to jot down to refer to later, do that as you first receive the test.
8. Take deep breaths. If you are anxious, stop and get control, then calmly proceed.
9. Be confident in your work, answer all questions, do your best!

Additionally, whenever given a multiple choice test, it is important to use a variety of skills. If you come to a test question that you have no real idea about, use one or more of the following techniques:

- Eliminate any answers you know are incorrect.
- Work the problem on scratch paper first, then look for your answer among the given choices.
- Try substituting the given answers back into the question to help eliminate answers.

M^2 - I Math Module I - S^2 Overview, Place Value, Rounding

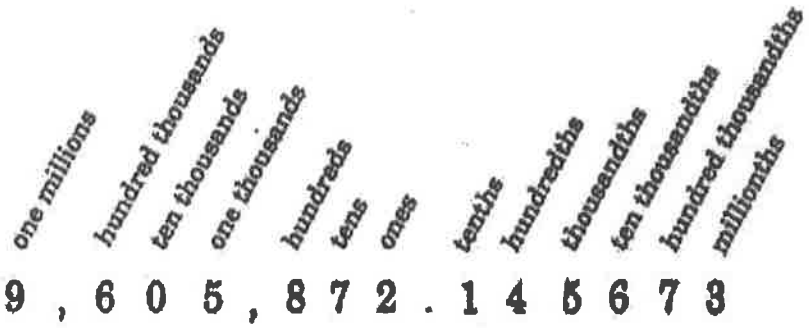
Getting Ready / Warming-up

Vocabulary Review - In mathematics as in life, it is very important that you know the meaning of the vocabulary used in the problems. In the chart below, place each word from the word bank under the operation it represents.

sum	minus	multiply	quotient	difference	times
plus	divide	less than	product	increased by	subtracted from
per	of	added to	divided by	more than	decreased by
twice	divided into				

Addition (+)	Subtraction (−)	Multiplication (·)	Division (÷)

Place Value Review



Write each of the following decimals in words.

1. 0.28 _____

2. 4.067 _____

Write each decimal in standard form.

3. Ninety-three and four tenths _____

4. Twenty-one and eleven thousandths _____

T^2 To Try - Write each of the following decimals in words.

a. 0.5 _____

b. 3.17 _____

c. 45.086 _____

Write each decimal in standard form.

d. Seventy-two and sixteen hundredths _____

e. Fifteen and five thousandths _____

f. Nine hundred eleven and seventy-two ten thousandths _____

Rounding Review - In life, and in our world, there are many times when we round numbers. Some examples might include: a monthly budget for groceries which we might round to the nearest ten dollars, our income tax papers which round to the nearest dollar, or gas mileage rounded to the nearest gallon. Let's review the process for rounding, and more specifically rounding decimals.

Steps for Rounding Decimals

1. _____

2. _____

Round each of the following decimals to the place value indicated.

1. Round 51.389 to the nearest tenth. _____

2. Round 71.262 to the nearest hundredth. _____

T^2 To Try - Round each of the following decimals to the place value indicated.

a. Round 42.375 to the nearest hundredth. _____

b. Round 59.241 to the nearest tenth. _____

c. Round 16.99999 to the nearest thousandth. _____

P^2 - I Practice Plus

Complete the table with your outside commitments and time per day spent with each activity.

Activity	# of hours per day
work	
sleep	
eat	
school (in class)	
school (study/homework)	
family	
extra curricular	
other:	
other:	
other:	

Total hours per day committed: _____

1. Now that you have totaled your daily commitments, reflect on one or more ways you could adjust your schedule when unexpected things arise.

   a. _____

   b. _____

2. List 3 test taking strategies you plan to use.

   a. _____

   b. _____

   c. _____

Write each of the following decimals in words.

3. 0.3 _____

4. 6.19 _____

5. 35.076 _____

Write each decimal in standard form.

6. Sixty-two and thirteen hundredths _____

7. Eighteen and four thousandths _____

8. Five hundred eleven and seventy-nine ten thousandths _____

Round each of the following decimals to the place value indicated.

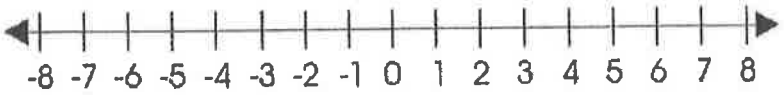
9. Round 56.275 to the nearest hundredth. _____

10. Round 81.731 to the nearest tenth. _____

M^2 - II Math Module II - Integers, Opposites, Absolute Value, Operations with Signed Numbers

In this module we will review integers, opposites, absolute value, and operations with signed numbers.

Looking at the number line below, the set of **integers** are represented. Marked on the number line are the whole numbers and their opposites.



The **signed numbers** are made up of the _____ numbers, the _____ numbers, and _____.

Numbers that are the same distance from 0 on a number line are known as _____. The "opposite of" is written as _____. By definition, if a is a number, then $-(-a) = a$.

Find the opposite of each number. These are not equal to each other, so be careful not to use an equal sign when writing the answer.

1. 12 2. -5 3. 0

T^2 To Try - Find the opposite of each number.

a. 9 b. -2 c. -8

The next concept that will be covered is absolute value. The symbol that denotes absolute value looks like _____. The absolute value of a number is defined as _____ _____. As you look above at the number line illustrated, you can see that 5 and -5 are both five units from zero. Likewise, the number 2 is the same distance from zero as -2.

Simplify the following.

1. $|-4|$ 2. $|8|$ 3. $|0|$

T^2 To Try - Find the absolute value.

a. $|-7|$ b. $|15|$ c. $|-9|$

As we review the four mathematical operations and signed numbers, it is important we recall the rules for each operation. Summarize the steps for adding integers in the spaces provided below.

When adding integers:

With the same sign

1. _____

2. _____

With different signs

1. _____

2. _____

1. $15 + 42$

2. $-5 + (-4)$

3. $-12 + (-12)$

4. $-43 + 43$

5. $15 + (-5)$

6. $-10 + 24$

7. $-10 + (-6) + (-1)$

8. $3 + (-23) + 6$

T^2 To Try - Add each of the following.

a. $19 + 28$

b. $-7 + (-6)$

c. $-20 + (-20)$

d. $-32 + 32$

e. $17 + (-11)$

f. $-6 + 36$

g. $-12 + (-5) + (-2)$

h. $4 + (-44) + 7$

When subtracting integers:

---

1. $12 - 7$

2. $-6 - 4$

3. $11 - (-14)$

4. $-9 - (-1)$

5. $-25 - (-25)$

6. Subtract 10 from -22.

7. $7 - 8 - (-5) - 1$

8. $7 + (-12) - 3 - (-8)$

T^2 To Try - Subtract each of the following.

a. $24 - 6$

b. $-17 - 8$

c. $21 - (-9)$

d. $-15 - (-6)$

e. $42 - (-42)$

f. Subtract 17 from -25.

g. $-4 - 3 - 7 - (-5)$

h. $3 + (-5) - 6 - (-4)$

When multiplying integers:

_____

When dividing integers:

_____

1. $-9 \cdot 6$

2. $-12(-10)$

3. $-3(-4)(-2)$

4. $(-5)(2)(-6)$

5. $-24 \div 6$

6. $\frac{-32}{4}$

7. $\frac{0}{-15}$

8. $\frac{-72}{-8}$

T^2 To Try - Multiply or divide each of the following.

a. $-7 \cdot 8$

b. $-7(-9)$

c. $-2(-4)(-5)$

d. $(-4)(3)(-5)$

e. $-48 \div 8$

f. $\frac{-60}{12}$

g. $\frac{-15}{0}$

h. $\frac{-75}{-5}$

P^2 - II Practice Plus

Find the opposite of each number.

1. 11
2. -2
3. 0

Find the absolute value.

4. $|-18|$
5. $|25|$
6. $|0|$

Add each of the following.

7. $-7+(-28)$
8. $32+(-17)$
9. $-16+16$
10. $9+(-22)+(-4)$

Subtract each of the following.

11. $-10-14$
12. $33-(-7)$
13. Subtract -9 from 16.
14. $-6-2-7-(-8)$

Multiply or divide each of the following.

15. $-3 \cdot 10$
16. $-7(-5)$
17. $(-2)(5)(-6)$
18. $-63 \div 9$
19. $\frac{-34}{-2}$
20. $\frac{-26}{0}$

M^2 - III Math Module III - Operations on Fractions

In this module we will be covering the basic concepts of fractions including the four operations with fractions.

Match each word to its definition in the list below:

_____ numerator	a. contains both a whole number and a fraction
_____ denominator	b. the top number of a fraction
_____ improper fraction	c. a fraction in which the numerator is less than the denominator
_____ proper fraction	d. the bottom number of a fraction
_____ mixed number	e. a fraction in which numerator is greater than or equal to the denominator

Now that you have recalled the definitions, give an example of each.

numerator:

denominator:

improper fraction:

proper fraction:

mixed number:

Now let's think about real-life situations where fractions and mixed numbers are used: the part of the pizza that did not get eaten $\left(\frac{1}{8}\right)$, getting your hair trimmed $\left(\frac{3}{4}\text{ inch}\right)$, length of a baby at birth $\left(19\frac{1}{2}\text{ inches}\right)$, the length of a piece of crown molding being cut for your home $\left(12\text{ feet }8\frac{1}{4}\text{ inches}\right)$, having some pants hemmed up that are too long $\left(1\frac{3}{8}\text{ inches}\right)$.

Now come up with a few examples yourself:

_____

_____

_____

Fractions are generally given in simplest form, or reduced form. This means that common factors shared by both the numerator and denominator have been divided out. Let's review this process by first looking at prime factorization.

Let's write a definition for:

Prime numbers: _____

Composite numbers: _____

Factors: _____

There are two processes that can be used when factoring a number into its prime factors. One process is called the "tree method," the other process is "repeated division." Let's look at each process:

Tree Method	**Repeated Division**
16	16
20	20

With this information, the fraction $\frac{16}{20}$ can be reduced by dividing both the numerator and the denominator by 4. The reduced or simplified form of $\frac{16}{20}$ is $\frac{4}{5}$.

Let's try some examples together where we reduce by dividing out common factors.

1. $\frac{3}{12}$

2. $\frac{14}{16}$

T^2 To Try - Write each of the following fractions in simplest form.

a. $\frac{35}{50}$

b. $\frac{24}{40}$

After you have learned to simplify fractions, you will then be able to compare fractions and determine if they are equivalent or not equivalent. You can compare the fractions using cross products or reduce both fractions to their simplest form. Let's look at the following examples:

1. $\frac{15}{18}$ and $\frac{5}{6}$

2. $\frac{20}{32}$ and $\frac{16}{24}$

T^2 To Try - Determine whether the following fractions are equivalent or not equivalent.

a. $\frac{8}{10}$ and $\frac{9}{12}$

b. $\frac{4}{10}$ and $\frac{6}{15}$

Now that we have reviewed the vocabulary of fractions and talked about reducing them to their simplest form, let's move to reviewing how to multiply and divide fractions.

To multiply fractions, we will multiply numerator times numerator and denominator times denominator. For some fractions, there is a short-cut we will use known as dividing out common factors. **Keep in mind the rules for operations with signed numbers as those rules will apply to fractions as well.** Let's look at a few examples:

1. $\frac{1}{3} \cdot \frac{4}{7}$

2. $-\frac{2}{5} \cdot \frac{15}{20}$

3. $\left(\frac{2}{9}\right)^2$

4. $\frac{5}{55} \cdot \left(-\frac{9}{10}\right)$

T^2 To Try - Multiply the following fractions. Give your answer in simplest form.

a. $\frac{1}{5} \cdot \frac{3}{8}$

b. $-\frac{3}{4} \cdot \frac{16}{27}$

c, $\left(\frac{5}{8}\right)^2$

d. $\frac{7}{25} \cdot \left(-\frac{3}{49}\right)$

Next we will divide fractions. With division, we will need to be reminded about reciprocals. Two numbers are reciprocals if _____. Give an example of two numbers that are reciprocals _____.

We will rewrite each division problem by changing the division sign to multiplication and the term that follows the operational sign to its reciprocal. Let's look at a few examples:

1. $\frac{3}{8} \div \frac{2}{3}$

2. $-\frac{2}{3} \div \frac{5}{6}$

3. $\frac{6}{15} \div \frac{12}{5}$

4. $\frac{5}{8} \div \left(-\frac{15}{18}\right)$

5. $\dfrac{\frac{a}{b}}{\frac{c}{d}}$

6. $\dfrac{\frac{1}{4}}{\frac{3}{2}}$

T² **To Try** - Divide the following fractions. Give your answer in simplest form.

a. $\frac{5}{8} \div \frac{2}{3}$

b. $-\frac{7}{8} \div \frac{5}{6}$

c. $\frac{4}{15} \div \frac{8}{3}$

d. $\frac{3}{25} \div \left(-\frac{27}{40}\right)$

e. $\dfrac{\frac{1}{5}}{\frac{7}{10}}$

f. $\dfrac{\frac{1}{8}}{\frac{3}{4}}$

Next we will review the process for adding and subtracting fractions.

In your own words, list the steps for adding or subtracting fractions. Keep in mind that you must have matching (common) denominators before you can add or subtract fractions.

Using the steps above, let's work the following problems together.

1. $\frac{3}{7} + \frac{2}{7}$

2. $\frac{1}{6} + \frac{5}{9}$

3. $-\frac{2}{9} + \frac{5}{9}$

4. $-\frac{9}{20} - \frac{2}{5}$

T^2 To Try - Perform the indicated operation. Give answer in simplest form.

a. $\frac{2}{9} + \frac{4}{9}$

b. $\frac{1}{6} + \frac{3}{8}$

c. $-\frac{3}{10} + \frac{7}{10}$

d. $-\frac{11}{28} - \frac{2}{7}$

At the beginning of our discussion of fractions, we talked about mixed numbers and improper fractions. Let's take a moment to review how one form can be written as the other.

Writing a mixed number as an improper fraction.

If we were to start with a mixed number $3\frac{5}{7}$ and want to rewrite it as an improper fraction, we would multiply the denominator and the whole number, then add the numerator. This number would be placed over our original denominator. In this example: $\left(\frac{7 \cdot 3+5}{7}\right)$ or $\frac{26}{7}$.

Let's look at a few examples:

1. $4\frac{5}{8}$ 2. $6\frac{2}{9}$

T² To Try - Write each mixed number as an improper fraction.

a. $5\frac{2}{3}$ b. $8\frac{5}{7}$

Writing an improper fraction as a mixed number.

When you have $\frac{9}{8}$, which is an improper fraction, it can be written as a mixed number by dividing the numerator by the denominator. Then as a mixed number we will have the whole number, the remainder becomes the numerator, and the divisor is the denominator of the fraction of the mixed number. In this example $\frac{9}{8} = 1\frac{1}{8}$.

Let's look at a few examples:

1. $\frac{11}{3}$ 2. $\frac{32}{7}$

T² To Try - Write each improper number as a mixed number.

a. $\frac{17}{5}$ b. $\frac{59}{8}$

To multiply and divide mixed numbers, it will be important to change the mixed numbers to be improper fractions. You will want to divide out any common factors to make these operations easier to complete. Let's look at a few examples:

1. $2\frac{3}{4} \cdot 3\frac{1}{3}$

2. $4\frac{2}{3} \cdot 1\frac{2}{7}$

T² **To Try** - Multiply the following mixed numbers. Give your answer in simplest form.

a. $5\frac{1}{3} \cdot 3\frac{1}{2}$

b. $7\frac{1}{3} \cdot 4\frac{1}{2}$

Remember with division of fractions and mixed numbers you much change the division sign to a multiplications sign and the term that follows to its reciprocal.

1. $4\frac{2}{7} \div 1\frac{1}{4}$

2. $5\frac{2}{3} \div 5\frac{1}{3}$

T² **To Try** - Divide the following mixed numbers. Give your answer in simplest form.

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

b. $3\frac{3}{4} \div 6\frac{1}{2}$

When adding and subtracting mixed numbers, it is generally best to leave them in mixed number notation to perform the operation. Remember when adding or subtracting mixed numbers, you must have a _____.

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

2. $4\frac{7}{10} - 1\frac{2}{5}$

3. $5\frac{3}{10} - 3\frac{4}{5}$

T² **To Try** - Add or subtract the following mixed numbers. Give your answer in simplest form.

a. $9\frac{1}{4} + 7\frac{7}{8}$

b. $8\frac{9}{16} - 3\frac{1}{2}$

c. $8\frac{1}{5} - 2\frac{5}{9}$

P^2 - III Practice Plus

Write the following number as a product of its prime factors.

1. 48

Write each fraction in simplest form.

2. $\frac{15}{18}$

3. $\frac{20}{45}$

Determine whether the following fractions are equivalent or not equivalent.

4. $\frac{12}{28}$ and $\frac{6}{14}$

"equivalent" or "not equivalent"

Multiply the fractions. Give your answer in simplest form.

5. $\frac{3}{5} \cdot \frac{4}{7}$

6. $-\frac{4}{9} \cdot \frac{12}{30}$

Divide the fractions. Give your answer in simplest form.

7. $\frac{5}{8} \div \frac{2}{3}$

8. $\frac{9}{10} \div \left(-\frac{3}{20}\right)$

Add or subtract the fractions. Give your answer in simplest form.

9. $\frac{3}{8} + \frac{1}{8}$

10. $-\frac{5}{12} + \frac{1}{4}$

11. $\frac{11}{15} - \frac{6}{15}$

12. $-\frac{3}{8} - \frac{5}{16}$

Write each mixed number as an improper fraction.

13. $5\frac{3}{4}$

14. $7\frac{5}{7}$

Write each improper fraction as a mixed number.

15. $\frac{20}{3}$

16. $\frac{61}{6}$

Multiply or divide the mixed numbers.

17. $5\frac{5}{6} \cdot 2\frac{2}{7}$

18. $8\frac{1}{3} \div 4\frac{5}{6}$

Add or subtract the mixed numbers.

19. $12\frac{3}{10} + 7\frac{1}{4}$

20. $8\frac{3}{5} + 4\frac{3}{4}$

21. $12\frac{3}{4} - 5\frac{1}{3}$

22. $15\frac{1}{9} - 12\frac{5}{6}$

Again, vocabulary plays an integral role in mathematics. Below are examples of the four basic operations on decimals. Fill in the blanks provided by matching the correct terminology from the word bank with each corresponding component.

product	minuend	divisor	addend	factor	sum
addend	factor	subtrahend	quotient	difference	dividend

$\begin{array}{r} 6.8 \\ +\,2.5 \\ \hline 9.3 \end{array}$ (6.8 _____, +2.5 _____, 9.3 _____)	$\begin{array}{r} 46.7 \\ -\,2.5 \\ \hline 44.2 \end{array}$ (46.7 _____, −2.5 _____, 44.2 _____)
$(1.2)\,(8) = 9.6$ or $1.2 \cdot 8 = 9.6$ _____ _____ _____ Note: We will not use " × " as a multiplication sign.	_____ $\frac{7.5}{5} = 1.5$ _____ _____

We can also write division problems in other ways:

$7.5 \div 5 = 1.5$ or $5\overline{)7.5} = 1.5$

With simple addition or multiplication, the commutative property applies, so order doesn't matter. Yet, with subtraction and division, order does matter.

Let's look at these next two examples:

$\frac{8.5}{0} =$ _____ $\frac{0}{9.2} =$ _____

When working problems involving decimals, proper placement of the decimal in the answer is of utmost importance. Let's write some basic rules for working with decimals and try a few practice problems.

Basic Rules for Adding or Subtracting Decimals

1. _____

2. _____

3. _____

Keep in mind the rules for operations with signed numbers as those rules will apply to decimals as well. Now let's try a few examples together.

1. $32.1 + 4.59 + 0.0792$

2. $7.9 - 4.5$

3. $6.4 + (-2.12)$

4. $-48.35 + 582.76$

T^2 To Try - Find the sum or difference for each of the following.

a. $24.6 + 2.39 + 0.0678$

b. $8.8 - 2.3$

c. $5.7 + (-1.13)$

d. $-56.67 + 654.9$

Basic Rules for Multiplying Decimals

1. _____

2. _____

Now let's try a few examples together.

1. $(0.47)(9)$

2. $(0.373)(-0.5)$

T^2 To Try - Find the product for each of the following.

a. $(0.26)(5)$ b. $(0.123)(-0.4)$

Basic Rules for Dividing by a Decimal

1. _____

2. _____

3. _____

Now let's try a few examples together.

1. $12.9 \div 3$ 2. $1.216 \div 0.38$

T^2 To Try - Find the quotient for each of the following.

a. $11.8 \div 2$ b. $1.296 \div 0.27$

Ordering

Now that we have reviewed decimals and fractions, let's take a moment to place a listing of fractions and decimals in order from smallest to largest. Sometimes ordering is easy to mentally reason out, and other times you may need to change all of the terms to either fractions with common denominators or decimals for comparison.

Given the listing: $\frac{1}{2}$, 0.75, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{1}{4}$, place the numbers in order from smallest to largest.

One method we can use is to rewrite each fraction as a decimal then compare.

$\frac{1}{2} =$ _____, $0.75 = 0.75$, $\frac{2}{5} =$ _____, $\frac{3}{8} =$ _____, $\frac{1}{4} =$ _____

Now that all are in decimal form, order them from smallest to largest. Be sure to write the numbers in their original form.

_____, _____, _____, _____, _____

T^2 To Try - Place the following set of numbers in order from smallest to largest. Write the numbers in their original form.

a. $\frac{3}{5}$, $\frac{7}{10}$, 0.35, $\frac{7}{8}$, 0.5

_____, _____, _____, _____, _____

P^2 - IV Practice Plus

For problems #1 - 10, perform the indicated operation.

1. $5.05 + 0.88$

2. $6.3 + 7.294$

3. $32.4 + 1.58 + 0.0934$

4. $-7.6 - 2.1$

5. $845.93 - 45.8$

6. $(0.19)(6)$

7. $(0.216)(-0.3)$

8. $(490.2)(0.023)$

9. $36.3 \div 6.6$

10. $2.176 \div 0.34$

Place the following set of numbers in order from smallest to largest. Write the numbers in their original form.

11. $\frac{3}{4}, \frac{2}{5}, 0.65, \frac{5}{8}, 0.45$

_____, _____, _____, _____, _____

M^2 - V Math Module V - Ratios, Proportions, and Percents

The next section will cover the basics of ratios, proportions, and percents. These topics are familiar to all of us.

Ratios

One example of a ratio would be the fuel that powers most weed eaters. For this piece of equipment, it is recommended you use 40 parts of gasoline to 1 part of two-cycle oil. Another example is when cooking; a recipe might call for 1 tablespoon of lemonade mix to 8 ounces of water. Looking at these examples, we can define a ratio as _____.

A ratio of 16 chairs to 7 tables can be written as: 16 to 7, 16 : 7, or $\frac{16}{7}$.

Let's work some examples together. Write each of the following ratios as a fraction. Write the fractions in simplest form.

1. 7 boys to 10 girls _____

2. 8 apples to 14 oranges _____

T^2 To Try - Write each of the following ratios as a fraction. Write the fractions in simplest form.

a. 3 adults to 10 children _____

b. 6 hamburgers to 2 orders of french fries _____

c. 2 cars to 8 trucks _____

Proportions

A proportion is a statement that says two ratios are equal. We can determine whether a proportion is true the same way we did in Module II, by using cross products. We can also use proportions to find unknown numbers in real-world problems.

Let's write the steps for finding an unknown value in a proportion.

1. _____

2. _____

Now let's try a few examples. Write each sentence as a proportion and solve.

1. If one student is needing 5 books for 2 classes, how many books will be needed for 4 classes?

2. If a car can travel 48 miles on 2 gallons of gas, how far can the car travel on 7 gallons of gas?

3. If 120 grams of frozen yogurt contains 12 grams of fat, how much fat is in 200 grams of frozen yogurt?

T^2 To Try - Write each sentence as a proportion and solve.

a. In his pickup, Darryl can drive 224 miles on 14 gallons of gas. How far could he drive on 20 gallons of gas?

b. The ratio of women to men in a college physics lecture course is 4 : 17. Find the number of men in this course if it has 32 women enrolled.

c. A nursing student observes an intravenous drip rate of 8 drops per 10 seconds. How many drops should be observed in 60 seconds?

Percents

In our city we pay sales tax on every dollar we spend at a rate of 8.5% on taxable merchandise. Scores on many exams are reported as percents. Food labels on products at the grocery store show recommended daily allowances of nutrients using percentages. These are all every day examples of percentages in our world. Percent means per _____ _____. The symbol used to represent percent is _____.

Let's first focus on some basic percents that many people have memorized. Being familiar with these will help you in the real world.

Complete the table below, looking for some patterns.

To calculate those you have not memorized, divide the numerator by the denominator.

Fractions	Percents	Fractions	Percents
a. $\frac{1}{4}$		i. $\frac{2}{3}$	
b. $\frac{1}{2}$		j. $\frac{1}{8}$	
c. $\frac{3}{4}$		k. $\frac{2}{8}$ or $\frac{1}{4}$	
d. $\frac{1}{5}$		l. $\frac{3}{8}$	
e. $\frac{2}{5}$		m. $\frac{4}{8}$ or $\frac{1}{2}$	
f. $\frac{3}{5}$		n. $\frac{5}{8}$	
g. $\frac{4}{5}$		o. $\frac{6}{8}$ or $\frac{3}{4}$	
h. $\frac{1}{3}$		p. $\frac{7}{8}$	

There are two methods for solving percent problems: by translating the information to an equation first, or setting up a proportion, and then solving. Most students tend to prefer one method over the other. Try both methods and then select the method that is easiest for you.

Method I: Translate to an equation and solve.	Method II: Solve by using proportions.
15% of 80 is what number?	15% of 80 is what number?
12% of what number is 7.8?	12% of what number is 7.8?
5 is what percent of 20?	5 is what percent of 20?

T^2 To Try - Solve the following by the method of your choice.

a. 42% of 50 is what number?

b. 15% of what number is 9?

c. 90 is what percent of 150?

d. What number is 20% of 85?

We can also use the same two methods to solve real world stated problems involving percent. As with percent problems, students tend to prefer one method over the other. Let's look at the following examples together.

Method I: Translate to an equation and solve.	Method II: Solve by using proportions.
A math class has 30 students enrolled. If there were 6 students absent from class, what percent of the students were absent?	A math class has 30 student enrolled. If there were 6 students absent from class, what percent of the students were absent?
A Biology student answered 80% of the questions correctly on a 20 question test. How many of the questions were answered correctly?	A Biology student answered 80% of the questions correctly on a 20 question test. How many of the questions were answered correctly?

T^2 To Try - Solve the following real world problems by the method of your choice.

a. A day care center has 40 children enrolled in its Mother's Day Out program. 14 of the children enrolled are boys. What percent of the day care's enrollment are boys?

b. Spencer's monthly income is $2800. He spends 35% of his income each month on utilities. How much money does he spend each month on utilities?

P^2 - V Practice Plus

Write each of the following ratios as a fraction. Write each fraction in simplest form.

1. 4 doctors to 15 nurses

2. 17 Biology students to 9 Music students

3. 3 pizzas to 24 hot wings

4. 10 basketball players to 29 football players

Solve each of the following problems using proportions.

5. A snowstorm dumped 18 inches of snow in a 12-hour period. How many inches of snow fell in 2 hours?

6. 5 pizzas cost $60. What will 9 pizzas cost?

7. If 5 pounds of grass seed will cover 1025 square feet, how many square feet can be covered by 15 pounds of grass seed?

8. A worker can complete the assembly of 15 disc players in 6 hours. At this rate, how many can the worker complete in a 40-hour work week?

Write each fraction as a percent.

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

10. $\frac{3}{8}$

11. $\frac{7}{10}$

12. $\frac{17}{50}$

Solve the following by the method of your choice.

13. 15% of 60 is what number?

14. 38 is 40% of what number?

15. 42 is what percent of 50?

16. What number is 36% of 45?

17. 25% of what number is 75?

18. 12 is what percent of 50?

19. A student in a Texas Government class answered 34 questions correctly on a test that had a total of 40 questions. What percent of the questions were answered correctly?

20. Emily's monthly income is $1800. She spends 12% of her monthly income on groceries. How much does she spend each month on groceries?

M^2 - VI Math Module VI - Exponents, Bases and Powers, Order of Operations

Sometimes a number will be written as a factor multiple times like $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$. This is known as expanded form but can be written in exponential form with 2 being the base and 5 being the exponent since the 2 was multiplied 5 times. Exponential form would look like 2^5 and would be read "two to the fifth power." The standard number for 2^5 would be 32. There are special words for the exponents of 2 and 3. For 7^2, we would read this as "seven squared" and 4^3 would be read as "four cubed."

Write using exponential notation.

1. $6 \cdot 6$

2. $3 \cdot 3 \cdot 3 \cdot 3$

Evaluate the following exponential expressions.

1. 9^2

2. 4^3

3. $(-6)^2$

4. -7^2

T^2 To Try - Below is a chart listing the most common squares and cubes. Some of the values have been filled in for you. Fill in the remaining values.

Squares	Cubes
$1^2 = 1$	$1^3 = 1$
$2^2 = 4$	$2^3 = 8$
$3^2 = 9$	$3^3 =$
$4^2 =$	$4^3 =$
$5^2 =$	$5^3 =$
$6^2 =$	
$7^2 =$	
$8^2 =$	
$9^2 =$	
$10^2 =$	
$11^2 =$	
$12^2 =$	
$13^2 =$	
$14^2 =$	
$15^2 =$	

Square Roots and Cube Roots

Now that we have looked at squares and cubes, let's look at how to evaluate square roots and cube roots.

When we use this symbol, $\sqrt{\ }$, we will be looking for a square root. The $\sqrt{\ }$ symbol is called a radical sign. The $\sqrt{64}$ is 8 because $8 \cdot 8 = 64$. You see when calculating square roots we are looking for two identical factors whose product equals the given number under the radical sign. The number under the radical sign, which in this example is 64, is called the **radicand**. We are looking for the number that is squared to get the radicand.

Similarly, we use the $\sqrt[3]{\ }$ symbol when looking for a cube root. When calculating cube roots, we are looking for three identical factors whose product equals the given number under the radical sign, or radicand.

The number "3" in the cube root symbol is called the **index**. If you don't see an index in the radical sign, it is implied to be a square root.

T^2 To Try - Below is a chart listing the most common square roots and cube roots. Some of the values have been filled in for you. Fill in the remaining values.

Square Roots	Cube Roots
$\sqrt{1} = 1$	$\sqrt[3]{1} = 1$
$\sqrt{4} = 2$	$\sqrt[3]{8} = 2$
$\sqrt{9} =$	$\sqrt[3]{27} =$
$\sqrt{16} =$	$\sqrt[3]{64} =$
$\sqrt{25} =$	$\sqrt[3]{125} =$
$\sqrt{36} =$	
$\sqrt{49} =$	
$\sqrt{64} =$	
$\sqrt{81} =$	
$\sqrt{100} =$	
$\sqrt{121} =$	
$\sqrt{144} =$	
$\sqrt{169} =$	
$\sqrt{196} =$	
$\sqrt{225} =$	

After you have familiarized yourself with squares and square roots, use your reasoning skills to complete the following:

1. $\sqrt{39}$ is between what two integers? _____ and _____

2. $\sqrt{75}$ is between what two integers? _____ and _____

T^2 To Try - Find the unknown values.

1. $\sqrt{22}$ is between what two integers? _____ and _____

2. $\sqrt{65}$ is between what two integers? _____ and _____

Order of Operations

Now that we have reviewed sign rules and exponents, let's discuss order of operations.

Simplifying expressions is not as simple as moving left to right as we read. There are four basic steps to simplifying expressions and arriving at the correct answer each time. In addition to following the four steps, it will be essential to pay close attention to the sign rules we have already discussed.

Write the rules for order of operations in your own words.

1. _____

2. _____

3. _____

4. _____

Let's try a few problems together.

1. $15 + 3 \cdot 2$

2. $14 \div 7 \cdot 2 + 3$

3. $6^2 \cdot (10-8)$

4. $(3+5) \cdot (9-3)$

5. $\dfrac{18+6}{(-2)^4-2^2}$

6. $6 \cdot \sqrt{9} + 3 \cdot \sqrt{4}$

T^2 **To Try** - Simplify the following using order of operations.

a. $24+6 \cdot 3$

b. $100 \div 10 \cdot 5 + 4$

c. $4^2 \cdot (15-5)$

d. $(7-9) \cdot (12+18)$

e. $\dfrac{40+8}{(-5)^2-3^2}$

f. $3 \cdot \sqrt{25} + 2 \cdot \sqrt{81}$

P^2 - VI Practice Plus

Give the base and the exponent of the following numbers written in exponential notation.

1. 7^4

   base: _____

   exponent: _____

2. 9^6

   base: _____

   exponent: _____

Write using exponential notation.

3. $5 \cdot 5 \cdot 5 \cdot 5$

4. $2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$

Evaluate the following exponential expressions.

5. 2^4

6. 8^2

7. 5^3

8. $(-3)^2$

Find each square root or cube root.

9. $\sqrt{49}$

10. $\sqrt{121}$

11. $\sqrt[3]{64}$

12. $\sqrt{82}$ is between what two integers? _____ and _____

Simplify the following using order of operations.

13. $9 + 6 \cdot 4$

14. $(2 - 6) \cdot (5 + 4)$

15. $36 - 12 \div 4 + 2$

16. $16 \div 2 \cdot 4 - 3$

17. $5^2 \cdot (12 - 7)$

18. $\dfrac{10 + 8}{4^2 - 5^2}$

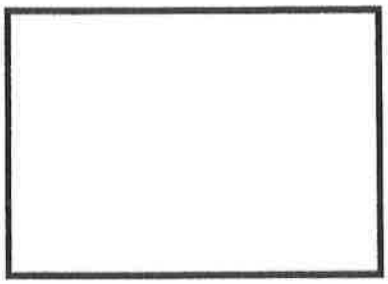
19. $\dfrac{(-6)^2 - 3^3}{15 - 12}$

20. $5 \cdot \sqrt{49} + 8 \cdot \sqrt{100}$

M^2 - VII Math Module VII - Geometry, Evaluating Expressions, Introduction to Algebra

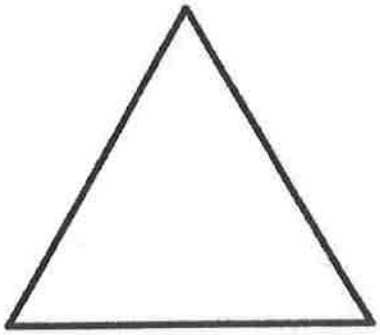
Some basic geometry formulas are important for every day problem solving. Recall that *perimeter* is the distance around a multiple-sided closed figure (polygon), and circumference is the distance around a circle. *Area* measures the amount of surface of a region or figure.

Complete the following formulas for each figure.



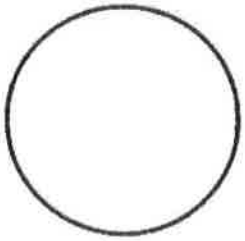
Perimeter of a rectangle:
P= _____

Area of a rectangle:
A= _____



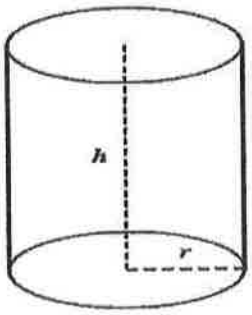
Perimeter of a triangle:
P= _____

Area of a triangle:
A= _____



Circumference of a circle:
C= _____

Area of a circle:
A= _____



Volume of a cylinder:
V= _____

1. Find the perimeter and the area of a rectangle whose length measures 12 inches and width measures 8 inches.

2. Find the area of a triangle whose base measures 20 centimeters and height measures 14 centimeters.

3. Find the circumference and the area of a circle whose radius measures 3 feet. Use 3.14 for π.

4. Calculate the volume of a cylinder given the following information: $r = 4$ inches, $h = 7$ inches, $\pi \approx 3.14$.

T^2 To Try - Use the measurements provided in each of the following real world problems to solve for the unknown.

a. Mary has a rectangular garden that measures 14 feet by 10 feet. She is wanting to put a fence around the exterior to keep her dogs out. Determine the perimeter for fencing purposes and the area she will have to grow her vegetables this summer.

b. Glenda has a triangular flower bed that she wants to put decorative brick around. The sides of the flower bed measure 6 meters, 8 meters, and 10 meters. Calculate the perimeter of her flower bed.

c. Jack purchased a used set of patio furniture with a circular table. Calculate the circumference and area of the top of the table if the radius is 30 inches. Use 3.14 for π.

d. Calculate the volume of a cylinder given the following information: $r = 5$ inches, $h = 8$ inches, $\pi \approx 3.14$.

Introduction to Algebra

Recall in algebra that a letter, which is referred to as a variable, is used to represent an unknown. For instance, if you work 40 hours per week your gross pay is $40x$, with x representing your pay per hour. Another example might be two siblings who are two years apart in age. One sibling's age is x and the other's is $x + 2$.

Using these examples, let's practice evaluating expressions.

$40x$ if $x = \$7.25$ an hour

$40x$ if $x = \$8.75$ an hour

$x + 2$ if $x = 7$ years old

$x + 2$ if $x = 51$ years old

T² To Try - Use the information to write an expression. Then evaluate the expression.

a. A car rental company charges a flat rate of \$39 a day to rent a compact car. Write an algebraic expression describing the cost of the compact car rented for x days, then determine how much will the rental company will change to rent this car for 7 days?

Now let's review how to combine like terms by looking at the next two examples.

1. $5x + x + 4 + 7$

2. $2x - 5 + 7 + 9x$

T² To Try - Simplify each expression by combining like terms.

a. $4b + 8b + 9 + 6$

b. $5y - 9 + 2 + 12y$

Next, let's apply the distributive property to simplify each of the following expressions.

1. $9(2x - 5) + 7(x + 4)$

2. $-6(2 - x) + 14$

T^2 **To Try** - Simplify each expression by using the distributive property.

a. $5(3x-4)+8(x+2)$ b. $-3(2-x)+10$

Solving Linear Equations in One Variable

One of the basic concepts of algebra is learning to solve equations. Equations differ from expressions because equations have an equal sign, expressions do not. Linear equations can be simple equations that are easy to solve or reason out in our head. They can also be much more complicated equations that require multiple steps. To solve linear equations we will use the distributive property, addition property of equality, and the multiplication property of equality.

First, let's determine if 5 is a solution for the following equations.

1. $3x+1=16$ 2. $4x-5=14$

Solution? "yes" or "no" _____ Solution? "yes" or "no" _____

The Addition Property of Equality states that a, b, and c are numbers. So

if $a=b$	Also, if $a=b$
then $a+c=$ _____	then $a-c=$ _____
and are equivalent equations.	and are equivalent equations.

Using the addition property of equality, solve.

1. $x-4=7$ 2. $x+5=11$

3. $y-9=-15$ 4. $n+10=7-3$

T² **To Try** - Solve each of the following using the addition property of equality.

a. $y - 7 = 15$

b. $a + 5 = 18$

c. $m - 4 = -6$

d. $x + 3 = 10 - 2$

The Multiplication Property of Equality states that a, b, and c are numbers and $c \neq 0$. So

if $a = b$	Also, if $a = b$
then $a \cdot c =$ _____	then $\frac{a}{c} =$ _____
and are equivalent equations.	and are equivalent equations.

Using the multiplication property of equality, solve.

1. $3x = 21$

2. $-2x = 14$

3. $\frac{1}{6}x = 5$

4. $\frac{3}{8}y = -3$

T² **To Try** - Solve each of the following using the multiplication property of equality.

a. $5x = 15$

b. $-9x = 18$

c. $\frac{1}{4}x = 8$

d. $\frac{3}{5}y = -9$

P^2 - VII Practice Plus

1. Find the perimeter and the area of a rectangle whose length measures 15 inches and width measures 10 inches.

2. Find the area of a triangle whose base measures 12 centimeters and height measures 8 centimeters.

3. Find the circumference and the area of a circle whose radius measures 4 feet. Use 3.14 for π.

4. Calculate the volume of a cylinder given the following information: $r = 5$ inches, $h = 6$ inches, $\pi \approx 3.14$.

For problems #5 -6, use the information to write an expression. Then evaluate the expression.

5. A supermarket charges a flat rate of \$19 a day to rent a carpet cleaning machine. Write an algebraic expression describing the cost of the carpet cleaning machine rented for x days, then determine how much will the supermarket will change to rent this machine for 3 days?

6. A Sonic employee earns \$8 an hour. Write an algebraic expression describing the earnings of this employee for working x hours, then determine how much the employee will earn for working 40 hours.

Simplify each expression by combining like terms.

7. $8y + y + 4y$

8. $6a + 9 - 2a - 4$

9. $2x - 3 - 8x + 11$

Simplify each expression by using the distributive property.

10. $4(y + 2) - 5$

11. $5(x + 6) + 3(2x - 4)$

12. $3(3x - 5) - 7(2x + 1)$

Solve each of the following using the addition property of equality.

13. $x - 7 = 10$

14. $y + 5 = 18$

15. $m - 8 = -14$

16. $x + 4 = 9 - 5$

Solve each of the following using the multiplication property of equality.

17. $5y = 45$

18. $-12x = 60$

19. $\frac{1}{4}x = 7$

20. $\frac{2}{5}y = -8$

M^2 - VIII Math Module VIII - Statistical Measurements, Conversions

Statistical Measurements

Next let's look at statistical measurements. Recall the definition for each of the following.

Mean: _____

_____

Median: _____

_____

Mode: _____

_____

Now let's try the following:

1. If a student's grades are 73, 82, 85, 90, and 90. Find the mean, median, and mode.

   Mean: _____

   Median: _____

   Mode: _____

2. Sally is enrolled in a math class which has four tests in the semester. She has already taken three of the tests and scored 72, 85, and 63. What score must be made on the fourth test to have at least a 70 average?

T^2 To Try - Use the given information to find the following.

a. If a student's grades are 75, 89, 75, 91, and 90. Find the mean, median, and mode.

   Mean: _____

   Median: _____

   Mode: _____

b. Sam is enrolled in a history class which has five tests in the semester. He has already taken four of the tests and scored 61, 72, 95, and 63. What score must be made on the fifth test to have at least a 70 average?

Measurement Conversions

Whether we are at work or at home, we must often work with measurement conversions in our day-to-day world. Some examples of measurement conversions would be when baking and converting from cups to pints, or in construction when converting from feet to yards.

There are a variety of methods to use when converting from one unit to another. Some of you may be able to calculate a conversion in your head because the skill is needed and used in your job.

Below is a conversion chart showing many of the most common conversion factors.

Conversion Chart

U. S. Units of Length	U.S. Units of Weight	U.S. Units of Capacity
12 inches(in) = 1 foot(ft)	16 ounces(oz) = 1 pound(lb)	8 fluid ounces(fl oz) = 1 cup(c)
3 feet = 1 yard(yd)	2000 pounds = 1 ton(T)	2 cups = 1 pint(pt)
36 inches = 1 yard		2 pints = 1 quart(qt)
5280 feet = 1 mile(mi)		4 quarts = 1 gallon(gal)
Metric Units of Length	**Metric Units of Mass**	**Metric Units of Capacity**
1 kilometer(km) = 1000 m	1 kilogram(kg) = 1000 g	1 kiloliter(kl) = 1000 L
1 hectometer(hm) = 100 m	1 hectogram(hg) = 100 g	1 hectoliter(hl) = 100 L
1 dekameter(dam) = 10 m	1 dekagram(dag) = 10 g	1 dekaliter(dal) = 10 L
1 meter = 1 m	1 gram = 1 g	1 liter = 1 L
1 decimeter(dm) = $\frac{1}{10}$m	1 decigram(dg) = $\frac{1}{10}$g	1 deciliter(dl) = $\frac{1}{10}$L
1 centimeter(cm) = $\frac{1}{100}$m	1 centigram(cg) = $\frac{1}{100}$g	1 centiliter(cl) = $\frac{1}{100}$L
1 millimeter(mm) = $\frac{1}{1000}$ m	1 milligram(mg) = $\frac{1}{1000}$ g	1 milliliter(ml) = $\frac{1}{1000}$ L

Use the conversion factors from the conversion chart to complete the following exercises.

1. 8 feet = _____ inches

2. 36 feet = _____ yards

3. 4 pounds = _____ ounces

4. 8000 pounds = _____ tons

5. 3 cups = _____ fluid ounces

6. 5 quarts = _____ pints

7. 25 meters = _____ centimeters

8. 3.2 kilograms = _____ grams

9. 2100 milliliters = _____ liters

T^2 To Try - Use the conversion factors from the conversion chart to complete the following exercises.

a. 48 inches = _____ feet

b. 3 yards = _____ feet

c. 8 pounds = _____ ounces

d. 2 tons = _____ pounds

e. 7 cups = _____ fluid ounces

f. 16 quarts = _____ gallons

g. 4500 meters = _____ kilometers

h. 580 decigrams = _____ grams

i. 27 liters = _____ milliliters

P^2 - VIII Practice Plus

Use the given information to find the following.

1. If a student's grades are 72, 85, 87, 93, and 93. Find the mean, median, and mode.

   Mean: _____

   Median: _____

   Mode: _____

Use the conversion factors from the conversion chart to complete the following exercises.

2. 36 inches = _____ feet

3. 5 pounds = _____ ounces

4. 65 meters = _____ centimeters

5. 4800 milliliters = _____ liters

P^2 Practice Plus Answer Key

P^2 - I

Activity table - answers will vary

1. Schedule adjustments - answers will vary.
2. Test taking strategies - answers will vary.
3. three tenths
4. six and nineteen hundredths
5. thirty-five and seventy-six thousandths

6.	62.13	7.	18.004	8.	511.0079
9.	56.28	10.	81.7		

P^2 - II

1.	-11	2.	2	3.	0
4.	18	5.	25	6.	0
7.	-35	8.	15	9.	0
10.	-17	11.	-24	12.	40
13.	25	14.	-7	15.	-30
16.	35	17.	60	18.	-7
19.	17	20.	undefined		

P^2 - III

1.	$2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$	2.	$\frac{5}{6}$	3.	$\frac{4}{9}$
4.	equivalent	5.	$\frac{12}{35}$	6.	$-\frac{8}{45}$
7.	$\frac{15}{16}$	8.	-6	9.	$\frac{1}{2}$

10. $-\frac{1}{6}$ 11. $\frac{1}{3}$ 12. $-\frac{11}{16}$

13. $\frac{23}{4}$ 14. $\frac{54}{7}$ 15. $6\frac{2}{3}$

16. $10\frac{1}{6}$ 17. $13\frac{1}{3}$ 18. $1\frac{21}{29}$

19. $19\frac{11}{20}$ 20. $13\frac{7}{20}$

21. $7\frac{5}{12}$ 22. $2\frac{5}{18}$

P² - IV

1. 5.93 2. 13.594 3. 34.0734

4. −9.7 5. 800.13 6. 1.14

7. −0.0648 8. 11.2746 9. 5.5

10. 6.4 11. $\frac{2}{5}$, 0.45, $\frac{5}{8}$, 0.65, $\frac{3}{4}$

P² - V

1. $\frac{4}{15}$ 2. $\frac{17}{9}$ 3. $\frac{1}{8}$

4. $\frac{10}{29}$ 5. 3 in. 6. $108

7. 3075 sq. ft. 8. 100 disc players 9. 40%

10. 37.5% 11. 70% 12. 34%

13. $n = 9$ 14. $n = 95$ 15. $n = 84\%$

16. $n = 16.2$ 17. $n = 300$ 18. $n = 24\%$

19. $n = 85\%$ 20. $n = \$216$

P² - VI

1. base: 7 exponent: 4
2. base: 9 exponent: 6

3.	5^4	4.	$2^3 \cdot 3^2$	5.	16
6.	64	7.	125	8.	9
9.	7	10.	11	11.	4
12.	9 and 10	13.	33	14.	-36
15.	35	16.	29	17.	125
18.	-2	19.	3	20.	115

P² - VII

1.	P = 50 in. A = 150 sq. in.			2.	A = 48 sq. cm.
3.	C = 25.12 ft. A = 50.24 sq. ft.			4.	V = 471 cu. in.
5.	\$57	6.	\$320	7.	$13y$
8.	$4a + 5$	9.	$-6x + 8$	10.	$4y + 3$
11.	$11x + 18$	12.	$-5x - 29$	13.	$x = 17$
14.	$y = 13$	15.	$m = -6$	16.	$x = 0$
17.	$y = 9$	18.	$x = -5$		
19.	$x = 28$	20.	$y = -20$		

P² - VIII

1.	86, 87, 93	2.	3 ft.	3.	80 ounces
4.	6500 cm	5.	4.8 liters		

Save-A-Semester I Exam Review

Translate each phrase to the decimal represented.

1. Thirty two and five hundredths _____

2. Sixty one and eleven thousandths _____

Give the absolute value.

3. $|16|$ _____
4. $|-8|$ _____

Perform the indicated operation.

5. $-4-18+6+(-7)$ _____
6. $-3 \cdot 8$ _____
7. $-36 \div -4$ _____
8. Subtract -2 from 12 _____

Write each fraction in simplest form.

9. $\frac{15}{24}$ _____

10. $\frac{12}{18}$ _____

11. $\frac{7}{8} - \frac{5}{20}$ _____

Perform the indicated operation on fractions and mixed numbers. Give your answer in simplest form.

12. $-\frac{2}{3} \div \frac{6}{8}$ _____

13. $-2\frac{1}{3} \cdot 2\frac{1}{2}$ _____

14. $6\frac{4}{7} + 2\frac{3}{14}$ _____

Perform the indicated operation on decimals.

15. $2.54 + 6.017 + 9.1$ _____

16. $(0.921)(-0.5)$ _____

17. $-4.7 - (-2.8)$ _____

18. $4.8 \div 1.5$ _____

Write each sentence as a proportion and solve.

19. If 2 burgers cost $9.50 how much will 5 burgers cost?

20. One out of every five students is currently enrolled in a math class. If there are 9200 students, how many students are enrolled in math?

Write each fraction as a percent.

21. $\frac{1}{4}$ _____

22. $\frac{3}{8}$ _____

Translate each to an equation or proportion and solve.

23. 15% of 60 is what number? _____

24. 24 of 20% of what number. _____

25. What % is 18 of 72? _____

26. A student answered 32 questions correctly on a test that had 40 questions. What percent of the questions were answered correctly?

_____

Evaluate the following.

27. 3^3 _____

28. $(-4)^2$ _____

Find each square root or cube root.

29. $\sqrt[3]{8}$ _____

30. $\sqrt{81}$ _____

Simplify the following using order of operations:

31. $9 + 2 \cdot 4$ _____

32. $(3 - 6) \cdot (2 + 4)$ _____

33. $18 \div 3 \cdot 2 + 10$ _____

34. $\frac{(-8)^2 - 4^2}{20-4}$ _____

Use the information provided to write an expression. Then evaluate the expression.

35. Mary charges $18 for a simple haircut. Write an algebraic expression describing her income for cutting x customer's hair. Then determine how much she will make cutting 5 people's hair.

36. Mark shovels snow from neighbor's walkways and driveways and charges an average of $22 for each job. Write an algebraic expression describing the income he brings in shoveling x driveways, then determine how much he will earn clearing 7 driveways.

Simplify each expression.

37. $2y + y - 5y$ _____

38. $9x + 8 - 16 - x$ _____

39. $7(a - 2) + 4$ _____

40. $3(x + 6) - 4(2x - 1)$ _____

Solve each of the following.

41. $x - 4 = 15$ _____

42. $x + 5 = 9 - 1$ _____

43. $5y = -35$ _____

44. $\frac{2}{3}y = -24$ _____

For each sequence, find the missing numbers in the sequence.

45. 8, 16, 24, _____ , _____, ...

46. 1, ½ , ¼ , _____ , _____ ,

Use the given information 82, 76, 80, 80, 67, to find:

47. Mean _____

48. Median _____

Use the conversion chart provided to make the following conversions.

49. 3 pounds = _____ fluid ounces.

50. 24 feet = _____ yards.

Math 301 Final Exam Review - Answer Key

1. 32.05
2. 61.011
3. 16
4. 8
5. -23
6. -24
7. 9
8. 14
9. $\frac{5}{8}$
10. $\frac{2}{3}$
11. $\frac{5}{8}$
12. $-\frac{8}{9}$
13. $-\frac{35}{6}$ or $-5\frac{5}{6}$
14. $8\frac{11}{14}$
15. 17.657
16. –0.4605
17. –1.9
18. 3.2
19. $23.75
20. 1840
21. 25%
22. 37.5%
23. 9
24. 120
25. 25%
26. 80%
27. 27
28. 16
29. 3
30. 9
31. 17
32. –18
33. 22
34. 3
35. 18x, $90
36. 22x, $154
37. –2y
38. 8x – 8
39. 7a – 10
40. –5x + 22
41. x = 19
42. x = 3
43. y = –7
44. y = –36
45. 32, 40
46. $\frac{1}{8}, \frac{1}{16}$
47. 77
48. 80
49. 48
50. 8