

Name \_\_\_\_\_  
Date \_\_\_\_\_

Intermediate Algebra – MTH 104  
Class #4

**Chapter 2.3 Applications of Algebra**

**Section 1. The Language of Algebra:**

Addition	Subtraction	Multiplication	Division
The _____ of	The _____ of	The _____ of	The _____ of

Equality	Inequality	Pre-Existing Condition Words

**Section 2. Convert the Following Verbal to the Algebraic Expression.**

1. When we read the phrase “a number” we will replace those words with the letter \_\_\_\_\_.
  - a. the radius  $r$ , increased by 2. \_\_\_\_\_
  - b. 5 less than twice the distance,  $d$ . \_\_\_\_\_
  - c. 7 times a number, increased by 12. \_\_\_\_\_
  - d. The cost of purchasing  $x$  shirts are \$4 each \_\_\_\_\_
  - e. The distance traveled in  $t$  hours at 55 miles per hour \_\_\_\_\_
  - f. The number of cents in  $d$  dimes \_\_\_\_\_
  - g. An 8% commission on sales of  $x$  dollars \_\_\_\_\_

**Section 3. More Algebraic to Numerical Expressions.**

2. Sometimes an algebraic problem will present two numbers that are numerically related to each other.

	One Number	Second Number
a. Dawn's age now, and Dawn's age in 6 years	_____	_____
b. one number is 4 times the other	_____	_____
c. a number and the number increased by 7%	_____	_____
d. a number and the number decreased by 10%	_____	_____
e. the sum of two numbers is 10	_____	_____
f. a 6-foot board cut into two lengths	_____	_____
g. \$10,000 shared by two people (_____)	_____	_____
h. a 12-foot board is cut into two pieces	_____	_____
i. the speed of a second train is 1.2 times the speed of the first	_____	_____
j. \$90 is shared by David and his brother, Paul	_____	_____
k. It takes Tom 3 hours longer than Roberta to complete the HW	_____	_____
l. Hilda has \$4 more than twice the amount of money Hector has	_____	_____
m. The length of the rectangle is 2 units less than 3 times the width	_____	_____

**Section 4. Consecutive Integers**

3. Sometime you will have to represent number that are related to each other.

- a. Represent three consecutive integers algebraically: \_\_\_\_\_
- b. Represent four consecutive even integers: \_\_\_\_\_
- c. Represent three consecutive odd integers: \_\_\_\_\_

**Practice Questions:**

- 1. The larger of two numbers is 1 less than three times the smaller number. The difference between 8 times the smaller and 2 times the larger is 10. Find the numbers.

2. Find 3 consecutive integers such that the sum of the first two integers is 24 more than the third integer.

**Section 5. C – V – S Problems.**

4. C – V – S stands for: \_\_\_\_\_
- a. Verizon's Best Times telephone long distance rate plan requires the customer to pay \$4.75 monthly fee and then \$.07 per minute for any long distance call made. How many minutes would this plan best a plan that charges a flat rate of \$.09 per minute.
- b. The Centers for Disease Control and Prevention is a federal agency whose task it is to protect the health and safety of the American people. In 2002, CDC had a budget of \$4.093 billion. The was a 22.5% increase from the 2000 CDC budget, but a 2.6% decrease from the 2001 CDC budget.
- (1) Determine the 2000 CDC Budget.
- (2) Determine the 2001 CDC Budget.

- c. Kathy is a banquet waitress. She is paid \$2.63 per hour plus 15% of the total cost of the food and beverages she serves during the banquet. If, during a 5-hour shift, Kathy earns \$400, what is the total cost of the food and beverages that she served?

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**Chapter 2.4 Additional Application Problems.**

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**Section 1. Motion Problems. The basic motion equation is \_\_\_\_\_.**

- 1. When the aircraft carrier USS John F. Kennedy and the nuclear powered submarine USS Memphis leave from the Pudget Sound Naval Yard at the same time heading for the same destination in the Indian Ocean. The carrier travels at its maximum speed of 34.5 miles per hour and the submarine travels at its maximum speed of 20.2 miles per hour. The carrier and the sub will travel at these speeds until they are 100 miles apart. How long will it take to reach this distance from each other? [ $d = rt$ ]


- 2. To get in shape for the track season, Juan and Pedro Santiago begin running home from school. Juan runs at a rate of 6 miles per hour, and Pedro runs 4 miles per hour. When they leave school at the same time, Juan arrives home  $\frac{1}{2}$  hour before Pedro.

- a. How long does it take for Pedro to reach home?

- b. How far do Juan and Pedro live from school?


**Section 2. Separate Problems**

- Betty sold her boat for \$15,000. She loaned some of the money to her friend Kathy. The loan was for one year with a simple interest rate of 4.5%. Betty put the remaining balance in an account at her credit union that yielded 3.75% simple interest. A year later, while working on her taxes, Betty found that she had earned a total of \$637.50 from the two investments, but could not remember the amount of money that she had loaned to Kathy. Determine the amount Betty had loaned to Kathy.


- Matt's Hot Dog Stand in Chicago sells hot dogs for \$2.00 each and beef tacos for \$2.25 each. If the sales for the day total \$585.50 and 278 items were sold all together, how many hot dogs and how many tacos were sold?


- Jamal Reynolds, a chemist, has both 6% and 15% lithium citrate solutions. He wishes to make 0.5 liter of an 8% lithium citrate solution. How much of each solution must he mix?


**Homework Section**

Page(s)	Section(s)	Problem(s)
95 → 100	2.3	1, 5, 11, 17, 45, 49, 31
105 → 110	2.4	1, 15, 17, 21, 25