

Spring 2008 MATH 70 Extra Credit

Ms. Addie Evans

April 23, 2008

INSTRUCTIONS: Neatly write complete answers for each problem assigned. Once completed, you must make an appointment with me so that you can explain your solutions to me. You may get help from tutors, classmates, friends et cetera but you must ultimately be able to understand the problems so that you can explain them to me.

1.) A green square is 8cm on it's side. Determine the area of a red square if a blue circle fits exactly into the green square and the red square fits exactly into an orange circle, two of which fit into the blue circle.

2.) If $ab = 10$ and $a^2 + b^2 = 30$, what is the value of $(a + b)^2$.

3.) Square ABCD has the centers of four equal circles as it's vertices. Find the area in the square that is not in any of the circles.

4.) A plane flies over Denver at 11:20AM. It passes over Coolidge, 120 miles from Denver, at 11:32AM. Find the rate of the plane in miles per hour. Make sure to include units and unit conversions in your calculations.

5.) Roger receives a basic salary of \$80 a week, plus a 5% commission. In a week in which his sales amounted to \$800 determine the ratio of his basic salary to his commission.

6.) What two digit number is equal to twice the product of it's digits?

7.) Solve the set simultaneous equations:

$$x - 2y - z = -9$$

$$2x - y + 2z = 7$$

$$3x - y = 0$$

8.) A piggy bank contained 110 coins, including nickels, dimes and quarters. If there are 20 more nickels than quarters and the number of dimes is equal to the number of quarters, how many coins of each kind are if the total collection equals \$13.00?

9.) How many quarts of a 50% solution of acid must be added to 20 quarts of a 20% solution of acid to obtain a 40% solution of acid?

10.) Mr. Chavajay invests \$2000 at 3% percent and the rest of his money at 2%. If his total income is 2.4% of his total investment, find how much was invested at 2%.

11.) In a collection of coins and bills consisting of dollar bills, quarters and dimes, there were $\frac{1}{3}$ as many dollar bills as quarters and 15 times as many dimes as quarters. The total value of the money was \$50. Find the number of dollar bills, quarters and dimes.

12.) Two cars start out at the same point and move in the same direction. Their speeds are in the ratio of 5:3. After 2 hours the cars are 42 miles apart. Find their speeds.

13.) One number is 5 times greater than another. If 5 times the smaller is subtracted from 3 times the larger, the remainder is 11. Find the numbers.

14.) Two numbers are in the ratio of 7:6. If 3 is subtracted from the larger and 7 from the smaller, the sum of the two remaining numbers is 68. Find the two numbers.