**Applied Problems:**

1. The size of the dollar bill of today is smaller than the dollar bills printed before 1929. The dimensions of those bills were 7.2 by 3.13 inches. The bills in circulation today are 6.14 by 2.61 inches. Find the area of each and determine about what percentage has our dollar bill reduced its’ area? **29%**
2. In 1897 the recommended size for a chicken house was given as “ten feet is wide enough and every ten feet in length will afford space for 15 hens.” According to this advice, find the area of a coop that could accommodate 60 hens. **400 sq ft**
3. Roofing shingles are packaged in groups called “squares”. One square covers 100 square feet of a roof. The roof of a house is made of two rectangles, each 13 feet by 36 feet. The two rectangles meet to form the peak of the home. How many squares of shingles are needed? **10 squares**
4. The diameter of an archery target is 48 inches. The diameter of the innermost circle is 9.6 inches. What percentage of the area of the target is the area of the smallest circle? **About 4 %**
5. Two pizzas have a 12-inch diameter. One pie is cut into eight equal slices, and the other is cut into 6 equal slices.If the 8 slice pie sells for $1 a slice, what would be the cost per slice of the 6 slice pie so that you would make at least the same amount of money per pie? **About $1.34 per slice**
6. A shoe box measures 6.5 inches by 3.5 inches by 12 inches. How many boxes of this size can be place on a 12-inch by 25-inch shelf if the shelf is one foot from the ceiling? What is the volume of wasted space? **10 boxes, 870 cu. in of wasted space**
7. Paul the painter had to paint three walls each of different heights. The tallest wall, which will be painted white, is 12’ taller than the wall that is to be painted blue. The difference between the white wall and the red wall is 8’ more than the difference between the red wall and the blue wall. If the blue wall is 8’ feet in height, how tall are the other two walls? **White wall is 20 ft & Red wall is 10 ft**
8. At a construction site two masons were building brick wall. Each wall of bricks requires 10 pounds of mortar. While building the wall a little of the mortar is left over. After four walls are built there is enough mortar to build another wall. If the masons start the day with 160 pounds of mortar, how many walls can be built? **21 walls**
9. To make curtains for a living room window for a customer, you will need three pieces of fabric in the following lengths: 3 feet, 3 feet, and 5 feet. What is the minimum cost for the curtains if the fabric is $49.00 per yard and your minimum labor charge is $100?

**$279.67**

1. You are a receptionist at a doctor's office. A patient's bill for a checkup totals $85.00. The patient's health insurance requires the patient to pay 20% of the total bill. How much should the patient pay for the' checkup? **$17.00**
2. As a laboratory assistant, you measure chemicals using the metric system. For your current research, you need to measure out 45 grams of sodium chloride. The bottle you are using lists the amount in ounces. About how many ounces of sodium chloride will you need?(1 Ounce = 28.3495231 Grams) **About 1.6 ounces**
3. You are making a welding fixture and must cut down a length of steel tubing from 193/8 inches to 119/16 inches. When you cut the tubing, you will waste 1/16 inch of it because of the width of the saw cut. If the leftover piece is long enough, you will use it in another fixture. How long will this leftover piece be? **7 ¾ inches**
4. You are doing marketing research to find out the purchasing potential of students in the community. Based on the latest census, there are 9,860 students in a population of 62,400 people. Students make up what percent of the total population? **15.8%**
5. You are applying fertilizer to a football field. The field is 360 feet long and 160 feet wide. You use 8 pounds of fertilizer per 1,000 square feet. The fertilizer comes in 50-pound bags. How many bags of fertilizer will you need to complete the job? **10 bags**
6. You are an urban planner assessing the growth of a city. Ten years ago, the city's population was 249,583. Its current population is 318,270. By about what percentage has the city grown over the past ten years? **About 28%**
7. You are comparing prices from 2 office supply stores. Your office needs 5 cases of blue paper. Home & Office Headquarters lists a case of paper at $25.85 with a 10% discount on an order of 5 cases or more. Office Supplies R Us lists a case of paper at $27,36 with a 15% discount on 5 cases or more. Delivery costs from Home & Office Headquarters are $2.50 per case. Office Supplies R Us will deliver for $10 an order. What is the least amount that you would have to spend for the paper? **$126.28**
8. To complete bookshelves, a customer at your store needs to purchase vertical brackets to attach to the wall. The customer wants the shelving to be 9 feet high (vertically) and 10 feet long (horizontally). The wall brackets come in 48-inch and 60-inch sections. The 48-inch sections cost $12.95; the 60-inch sections cost $16.95. The brackets should be placed 1 foot from each end and no more than 24 inches apart. Before tax is added, what will be the total cost of the brackets the customer will need? **$149.50**
9. Charles owns a toy store and stores his inventory of toys at his home office. He keeps them in plastic containers. Each container holds 12 toy boxes and he has 278 toy boxes to store and is expecting a shipment of an additional 150 toy boxes. He has 20 containers already. What will be the cost to purchase additional containers at $3.50 each to hold his entire inventory? **$56.00**
10. Todd wants to order the newest video game for his store. His cost is $21.15 and he will sell the game for double the price, plus an additional 15% of the doubled price. He wants to keep the cost of games at about $50 including the additional 8.5% sales tax. What is the final customer cost for the game? **$52.79**
11. Stan walks 10 miles a day on his delivery route. He works five days per week. He has 15 vacation days, 10 holidays, and 10 sick days (he usually uses only 20%) per year. About how many miles does he walk each year while on the job? **2330 miles**