Unit 3 Mixed Practice

1. If the length of a rectangle is 1 meter more than three times the width, then write an equation for the perimeter of the rectangle in terms of the width of the rectangle.

2. The height of a right circular cylinder equals its diameter. Write the volume of the cylinder as a function of its radius.

3. One leg of a right triangle is twice as long as the other. Write the length of the hypotenuse as a function of the shorter leg.

4. The base of an isosceles triangle is half as long as the two equal sides. Write the area of the triangle as a function of the length of the base.

5. Suppose you want to use 600 meters of fencing to surround two identical adjacent rectangular plots. Write a function for the combined area of the plots with respect to the length of one of the sides (x). What dimensions would produce the maximum combined area? What is that maximum combined area?

6. A farmer with 1000 meters of fencing wants to enclose a rectangular plot that borders along a straight river. If the farmer does not want to fence along the river, what is the largest area that can be enclosed? What dimensions produce that area?

7. You decide to build a dog run in a back corner your yard. If you only have 60 feet of fencing, what is the maximum area that you can enclose? What dimensions produce the maximum area?

8. Suppose a stream borders our land, and we want to make a right-triangular garden with the stream as the hypotenuse. If we have only 80 feet of fencing, what is the maximum area of our garden? What dimensions produce the maximum area?

9. A gas station owner has 30 gallons of gasoline worth $1.20 per gallon and some worth $1.40 per gallon. How many gallons of the $1.40 brand must the owner mix in to produce gasoline that costs $1.28 per gallon?

10. How many pounds of coffee worth $1.44 a pound should be mixed with 20 pounds worth $1.80 a pound to produce a mixture worth $1.56 a pound?

11. How much water must be added to 20 ounces of a 15% solution of argyrol to reduce it to a solution that is 10% argyrol?

12. How much of a 75% copper alloy should be melted into 62 kg of a 35% copper alloy to produce an alloy which is 50% copper