Math 220 - Calculus f. Business and Management

Worksheet 1 - Introduction to Functions

Simple Business Problems

Exercise 1: *A company is planning to make dishes. The initial cost to begin manufacturing is* $\$950,000$*. The raw material and labor for each plate is* $\$4.00$*. The raw material and labor for each bowl is* $\$2.00$*. What is the cost to make* $100,000$ *plates and* $50,000$ *bowls?*

Exercise 2: *The company in problem 1 will sell each plate for* $\$8.00$ *and each bowl for* $\$7.00$*. How much revenue will the company receive by selling all the plates and bowls? Will the company make a profit at this volume of plates and bowls? If so, how much profit will it make? If not, what are its losses?*

Exercise 3:

If the company were to only make plates, how many plates would it need to break even?

Geometric Cost Problems

Exercise 4:

Carpet costs $\$20$ *per square meter. What is the cost to carpet*

- ***a.*** *a rectangular room that is* 3 *meters by* 4 *meters?*
- ***b.*** *A circular room that has a radius of* 2 *meters?*
- ***c.*** *A space that is a right triangle with legs of length* 4 *meters and* 3 *meters?*

Exercise 5: *Fencing to surround each of the shapes in the previous problem costs $15.00 per meter. What is the cost to surround each of the shapes?*

Exercise 6:

A rectangular prism has sides of 30 *cm,* 25 *cm and* 40 *cm. Material to cover the prism costs* $\$1.50$ *per square cm (*cm^2*). How much will it cost to cover all six sides (surface areas) of the prism?*

Exercise 7:
a. *Use the information from the previous problem to find the cost to cover a cylinder that has a radius of* 2 *cm and a height of* 6 *cm.*
b. *What would it cost to cover a sphere with a radius of* 3 *cm?*

Exercise 8: *Suppose you have containers in the shapes described in the previous two problems. Liquid to fill the containers costs* $\$0.10$ *per cubic centimeter (*cm^3*). How much will it cost to fill each of the containers?*