**Fixed and Variable Expenses** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hr:\_\_\_\_

1. The fixed expenses for producing widgets are $947,900. The labor and materials required for each widget produced costs $16.44. Write an equation for the total expenses in terms of the quantity(q).
2. A widget manufacturer’s expenses expense equation is $E=14q+29,000$.
3. What are the variable costs to produce the widget?
4. What are the fixed expenses?
5. The Crazy Cat Corporation manufactures litter boxes for cats. Their expense equation is

$E=4.1q+82,000$. Find the average cost of producing 10,000 litter boxes.

1. The expense equation for a certain item is $E=2.95q+712,000$. Using this equation write a new equation expressing the average cost of producing for q items. (In other words solve for q)
2. The Mattel Corporation has created a demand equation for one of its toys. It expresses the quantity demanded in terms of wholesale price p. The equation is $q=-98p+5,788$. Their expense equation is $E=23q+68,000.$ Write a new expense equation in terms of p. (plug what q equals in for q in the expense equation then simplify)
3. Wexler’s manufactures widgets. They create a monthly expense equation of all expenses in one month of manufacturing. The expense equation is E = 2.10q + 7600. They plan to sell the widgets to retailers at wholesale price of $3.50 each.

a. How much money will they receive if they sell 2, 900 widgets?

b. If the company sells 2,900 widgets how much will their expenses be?

c. Will they gain or lose when you compare the earnings with the expenses and how much?

1. Find the break-even point for the expense equation E = 6.25q+259,325 and the revenue function R=12q.
2. The Nike Corporation produces a product with fixed expenses of$523dollars and variable expenses of $10 dollars per item. If q represents quantity produced, write the expense function.
3. The Smith Corporation invented a new type of sunglass lens. Their variable expenses are $12.66 per unit, and their fixed expenses are $111,200.
4. Write an expense equation for the sunglass lens.
5. Using the expense equation from part a, write a new equation expressing the average cost of producing for q items. (In other words solve for q)
6. What is the average cost, to the nearest cent, of producing 15,000 lenses?
7. What is the average cost, the nearest cent, of producing 17,000 lenses?
8. As the number of widgets increased from 15,000 to 17,000 did the average expense per lens increase or decrease?