Unit 5 Lesson 6 – Rate of Change & Initial Value

1.) When someone purchases a new car and begins to drive it, the mileage (meaning the number of miles the car has traveled) immediately increases. Let $x$ represent the number of years since the car was purchased and $y$ represent the total miles traveled. The linear function that models the relationship between the number of years since purchase and the total miles traveled is $y=15000x$.

a.) Identify and interpret the rate of change.

b.) Identify and interpret the initial value.

c.) Is the mileage increasing or decreasing each year according to the model? Explain your reasoning.

2.) When someone purchases a new car and begins to drive it, generally speaking, the resale value of the car (in dollars) goes down each year. Let $x$ represent the number of years since purchase and $y$ represent the resale value of the car (in dollars). The linear function that models the resale value based on the number of years since purchase is $y=20000-1200x$.

a.) Identify and interpret the rate of change.

b.) Identify and interpret the initial value.

c.) Is the resale value increasing or decreasing each year according to the model? Explain.

3.) In 2008, a collector of sports memorabilia purchased 5 specific baseball cards as an investment. Let y represent the card’s resale value (in dollars) and x represent the number of years since purchase. Each card’s resale value after 0, 1, 2, 3 and 4 years could be modeled by linear equations as follows:

Card A: y = 5 – 0.7x

Card B: y = 4 + 2.6x

Card C: y = 10 + 0.9x

Card D: y = 10 – 1.1x

Card E: y = 8 + 0.25x

a.) Which card(s) are decreasing in value each year? How can you tell?

b.) Which card(s) had the greatest initial value at purchase? What was the initial value?

c.) Which card(s) is increasing in value the fastest from year to year? How can you tell?

d.) What does the 0.9 value represent in Card C’s equation?

e.) What does the 5 value represent in Card A’s equation?

f.) If you were to graph the equations of the resale values of Card B and Card C, which card’s graph line would be steeper? How can you tell?

g.) What do the 8 and the 0.25 represent in the equation for Card E?