Section 7.25: Linear Modeling

1) A trail up a mountain gains elevation at a rate of 650 feet per mile.

2) What are the independent and dependent variables?

3) What's the rate of change?

4) If you hike 4 miles up the mountain, what will be the change in elevation?

5) If your change in elevation is 1500 feet, then how many miles have you hiked?

General Equation for a Linear Function

Dependent Variable = initial value+(rate of change x independent variable)

of dependent variable

***Also known as y = b + mx**

6) The cost of a cab ride is $3.00 plus 2.25 per mile.

a) What are the independent and dependent variables?

b) What's the rate of change?

c) What's the value of the initial dependent variable?

d) Write a linear equation for this function.

e) How much will it cost to take a cab to the airport which is 26 miles away?

7) The height of an average 60 year old woman is 65 inches. After the age of 60, women lose an average of one inch in their height every 5 years.

a) What are the independent and dependent variables?

b) What's the rate of change?

c) What's the value of the initial dependent variable?

d) Write a linear equation for this function.

e) How many inches shorter will an average 76 year old woman be?

8) A new car cost $23,000. After 2 years the car is worth $15,075.

a) What are the independent and dependent variables?

b) What's the rate of change?

c) What's the value of the initial dependent variable?

d) Write a linear equation for this function.

e) How old is the car when it is worth $8000?

Warm Up Section 7.25

1) The softball team is having a fundraiser. They are charging $15 for a ticket for a spaghetti dinner. The dinner costs the softball team $300.

a) What are the independent and dependent variables?

b) What's the rate of change?

c) What's the value of the initial dependent variable?

d) Write a linear equation that gives the profit/loss for this fundraiser.

e) How many tickets will the softball team need to sell in order to make a profit of $500?

f) How many tickets will the softball team need to sell in order to break even?

2) You work at an assembly line that manufactures computer chips. You arrive at work to find a stock of 25 chips. The chips are produced at a constant rate of 4 chips per hour.

a) What are the independent and dependent variables?

b) What's the rate of change?

c) What's the value of the initial dependent variable?

d) Write a linear equation for this function.

e) How many chips will there be after you have been at work for 3.5 hours?

f) How many hours have you worked when there 50 chips?