Linear Models

Recall:

- The graph of a linear function is a _____.
- The equation is of the form _____ where ____ is the slope and ____ is the y-intercept
- In the table of values of a linear function, the _____ differences are constant.
- The **rate of change** for a linear function is **constant**. The _____ is a measure of the rate of change.
- When the rate of change (slope) is positive, the quantity is _____
- When the rate of change (slope) is negative, the quantity is _____
- When the rate of change (slope) is zero, the quantity is _____
- Slope can be found using one of the following methods:

$m = \frac{rise}{run}$ or $m = \frac{y_2 - y_1}{x_2 - x_1}$ where (x_1, y_1) and (x_2, y_2) are any 2 points on the line

Example 1 A luxury car rental company charges a flat rate of $100 plus $1.50/km to rent its vehicles.

a. Write an equation for C, the total cost of the rental in dollars, in terms of n, the number of km driven.

b. Use a table of values to create a graph for the function. Use n values from 0 to 500.

c. What is the C-intercept and what does it represent?

d. What is the slope (with units) and what does it represent?

Example 2 Determine the equation of the line.