

## C3L2 Notes

### Linear Models: Building Linear Functions From Data

ROUND ALL ANSWERS TO TWO DECIMAL PLACES IF NECESSARY.

1. The following data represent the weight (in grams) of various candy bars and the corresponding number of calories.

Candy Bar	Weight, x	Calories, y
Hershey's Milk Chocolate	44.28	230
Nestle's Crunch	44.84	230
Butterfinger	61.30	270
Baby Ruth	66.45	280
Almond Joy	47.33	220
Twix (with Caramel)	58.00	280
Snickers	61.12	280
Heath	39.52	210

- a. Use a graphing utility to draw a scatter diagram.
- b. Use a graphing utility to find the line of best fit that models the relation between the weight and number of calories in a candy bar. Express the model using function notation.
- c. Interpret the slope.
- d. Predict the number of calories in a candy bar that weighs 70 g.
- e. If a candy bar had 260 calories, how much would it weigh?

2. A marina owner wishes to estimate a linear function that relates boat length in feet and its draft (depth of boat below water line) in feet. He collects the following data:

Boat Length (ft)	Draft (ft)
25	2.5
26	2
30	3
32	3.5
45	6
48	6.5
50	7
53	8

- a. Use a graphing utility to draw a scatter diagram.
- b. Use a graphing utility to find the line of best fit that models the relation between boat length in feet and its draft in feet. Express the model using function notation.
- c. Interpret the slope.
- d. Predict the draft of a boat whose length is 65 ft.
- e. Using the model found above, find the length of a boat whose draft is 5 ft.