

1. The table below shows the cost, C , in dollars, of selling x cups of coffee per day from a cart.

X	0	5	10	50	100	200
C	50.00	51.25	52.50	62.50	75.00	100.00

- Using the table, show that the relationship appears to be linear.
 - Find the slope of the line. Explain what this means in the context of the problem.
 - Find the y -intercept. IN regards to the context of the given information, explain what the y -intercept tells us and why it is that amount.
 - Give an example of interpolation and extrapolation.
- A theatre manager graphed weekly profits as a function of the number of patrons and found that the relationship was linear. One week of profit was \$11,328 when 1324 patrons attended. Another week 1529 patrons produced a profit of \$13,275.50.
 - Find a formula for weekly profit, y , as a function of the number of patrons, x .
 - Interpret the slope, using complete sentences.
 - Interpret the y -intercept, using complete sentences.
 - What is the break-even point (the number of patrons for which there is zero profit)?
 - Find the formula for the number of patrons, x , as a function for weekly profit, y .
 - If the weekly profit was \$17,759.50, how many patrons attended the theatre?
 - The table shows the height in feet, $h(t)$, t seconds after a ball is thrown upward.

T(seconds)	0	1	3
H(t) (feet)	72	112	96

 - Explain why a quadratic model is appropriate and then find a quadratic function that models this data.
 - Find the maximum height attained by the ball.
 - When is the ball at its maximum height?
 - When is the ball at 85 feet above the ground?
 - When does the ball hit the ground?
 - Find two numbers whose sum is 11 and product is 24

5. The following tables show the monthly temperatures for Washington, D.C., and Indianapolis, Indiana.

Baltimore, MD		Indianapolis, Indiana	
Month, x	Average Monthly Temp, °F	Month, x	Average Monthly Temp, °F
January, 1	31.8	January, 1	25.5
February, 2	34.8	February, 2	29.6
March, 3	44.1	March, 3	41.4
April, 4	53.4	April, 4	52.4
May, 5	63.4	May, 5	62.8
June, 6	72.5	June, 6	71.9
July, 7	77.0	July, 7	75.4
August, 8	75.6	August, 8	73.2
September, 9	68.5	September, 9	66.6
October, 10	56.6	October, 10	54.7
November, 11	46.8	November, 11	43.0
December, 12	36.7	December, 12	30.9

- Create a scatter plot of each set of data. Find the sine regression model for both cities.
 Baltimore $y =$ _____
 Indianapolis $y =$ _____
- How do the periods for both cities compare? Why would you expect this?
- Let the next year's January be $x = 13$, February be $x = 14$, and so on. Based on this data, what can we expect the next July's temperature to be in Baltimore, MD? Will it be warmer or cooler in Indianapolis? Be sure to list the temperatures as evidence to your conclusion.

D. Which city has temperatures that are the most variable? Why?

E. What is the "average" temp in each city?