Dinner Party
DinnerParty.tns

Name _____

Class _____

Problem 1 – Linear Bistro

Your boss asks you to plan a retirement party for one of your co-workers. You are comparing the cost of a dinner party at different restaurants. Each restaurant charges a flat room fee (no matter how many guests attend) and a per plate fee.

This chart on page 1.3 shows the costs of a party at the Linear Bistro for different numbers of guests.

You need to determine the room fee and the per plate fee at Linear Bistro.

- To find this out, first use the data to make a scatter plot on page 1.5

  1. Which variable represents the *x*-values, the guests or the costs? Which variable represents the *y*-values?

  2. Look at the plotted points on the scatter plot. What do you notice?

- Use the **Line** tool to draw a line through the points on page 1.5. Click on two of the points to draw the line.

  3. Describe the line. Do all of the points lie on the line?

- The *y*-intercept of the line you drew represents the flat room fee at Linear Bistro.

  4. What does the slope of the line represent?

  5. Use the scale on the *y*-axis to estimate the *y*-intercept.

- Use the **Coordinates and Equations** tool to find the equation of the line you drew. Switch page 1.5 to **Function Mode** and enter the equation in **f1**.

- You can use a function table to find the exact value of the *y*-intercept. To see the function table, go to **MENU > Table > Split-screen Table.**

  6. How can you find the *y*-intercept in a function table?

  7. What is the room fee at Linear Bistro?

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- You can write a row from the function table as a coordinate pair. For example, the first row can be written as (0, 150).

    8. Write another row from the function table as a coordinate pair.

    9. Use these two points to find the slope of the line. What is the fee per plate?

    10. What do you notice about the slope of the line, the *y*-intercept, and the equation?

Problem 2 – Straight Eight's Restaurant

- Straight Eight's Restaurant charges a $80 room fee and $35 per plate.

    11. How much would it cost for a private party of 10 people to eat at Straight Eight's?

    12. Write an equation in the form $y = mx + b$ that models the cost of a private party at Straight Eight's and graph it on page 2.3.

    13. Add a function table to check your equation. Is the *y*-intercept correct? Does the value at $x = 10$ match your answer to Question 11?

Problem 3 – First Degree Café

- The First Degree Cafe charges $185 for a party of 5 people. The per plate charge is $21.

    14. Write an equation in the form $(y - y_1) = m(x - x_1)$ that models the cost of a private party at the First Degree Cafe.

- Simplify the equation and graph it on page 3.3.

    15. Add a function table. Explain how to use it to check your equation.

    16. How can you use the **Slope** tool to check your equation?