

Name: _____ Period: _____

Lab 2: Extrapolating & Interpolating Data

Introduction: In this activity, you will be using a sample of ordinary poster board with uniform thickness to study area. Since the thickness is **constant**, you can measure the mass and area of rectangular poster board samples and graph the data to find a relationship between mass and area (mass/area). Using the graph, you will then be able to find the unknown area of an irregularly shaped sample of poster board.

Procedure:

1. Obtain four rectangles of poster board from the teacher. Notice that each piece has been labeled with a letter or number. Please record this letter or number in your data table.
2. Find the mass of each sample of poster board and record the mass of each in the data table.
3. Measure the length and width of each sample to the nearest 0.1 cm. Record these measurements under length and width in the data table.
4. Calculate the area of each sample of poster board.
5. Obtain an irregular piece of poster. Find the mass and record the mass in the data table.

Materials:

Balance 5 samples of poster board of regular shape 1 Irregular sample Ruler

PART A:

Data Tables:

Rectangle Code	Mass (g)	Length	x	Width	= Area (cm ²)

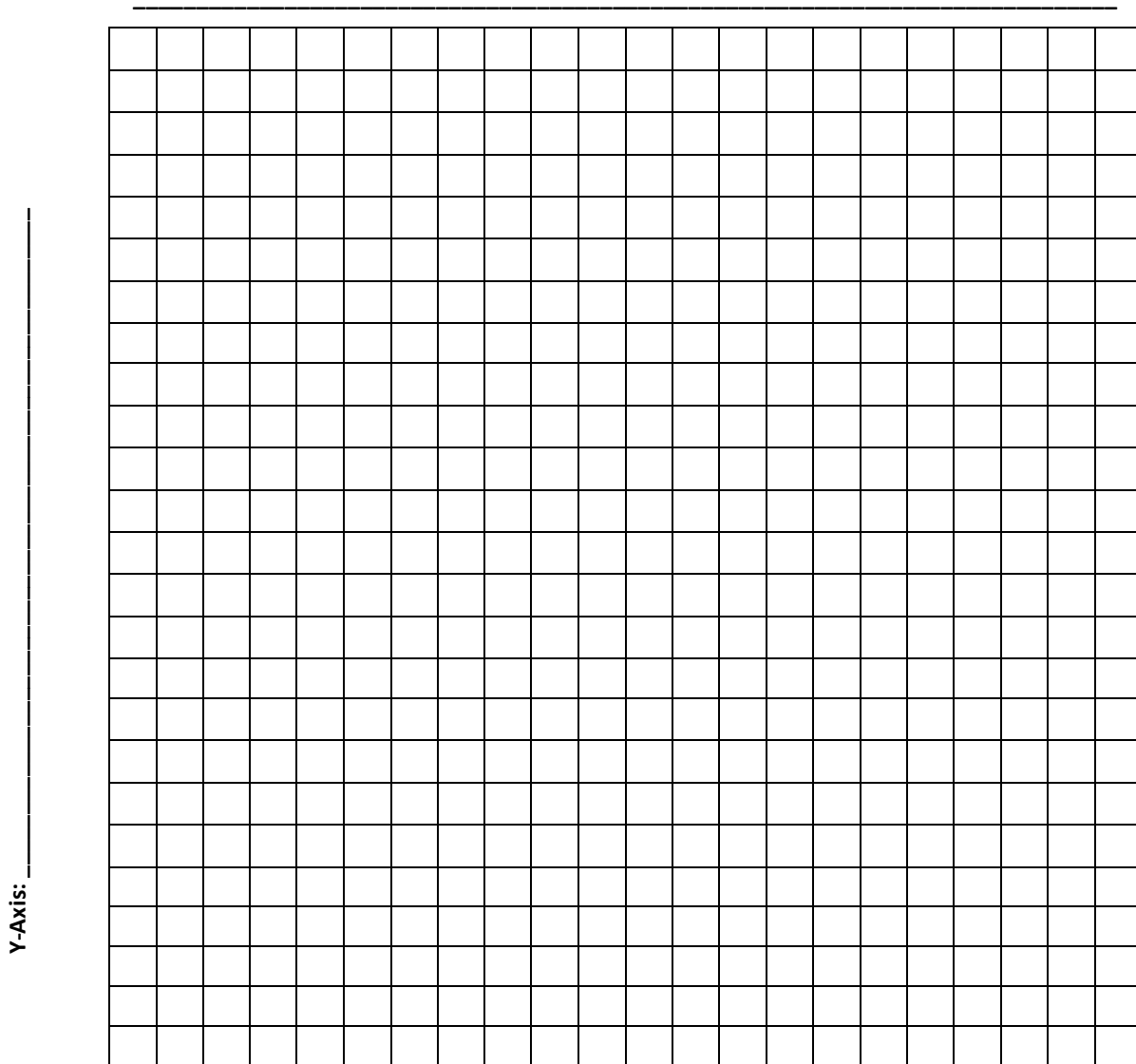
Irregular Sample	Mass (g)	Area* (cm ²)

* Note: The Area will be determined after you construct the graph.

Graph:

1. **For your "regular" samples:** Using the graph provided, plot a graph of mass versus area for your rectangular samples. Make sure to do the following on your graph:
 - a. **Give your graph a title!**
 - b. **Title the x and y axes!** For this lab it isn't totally obvious which is the independent or dependent variable; put the MASS on the X axis and the AREA on the Y axis.
 - c. **Create your number lines for the x and y axes by first determining your highest number that will be on your graph to make sure it will fit on the axis!** (See Mrs. H for help if needed!)
 - d. **Label each point on your graph with its rectangle code! Be sure to label each axis.**
2. **For your "irregular" sample:** Locate the mass of your irregular object on the line of your graph and determine its area by moving across horizontally to the y-axis. **Record the area in the data table. Show this INFERRED data point on your graph by marking the data point with a GREEN STAR (*).**

Graph Title: _____



X-Axis: _____

PART B:

Conclusions: (Answer the following in complete sentences!)

1. What is interpolation? What is extrapolation?

2. When determining your irregular shape's area, did you have to interpolate or extrapolate on your graph? Explain your answer.

Lab 2 (1.3: Scientific Skills)

3. Use your graph to interpolate/extrapolate and determine the mass of a poster board sample with an area of 26 cm². Put this point on your graph using a **BLUE SQUARE** shape for the data point.

Mass of 26 cm² poster board = _____

Is this interpolation or extrapolation? _____

4. What is the area of a sample of poster board that has a mass of 3.5 grams? Put this point on your graph using a **PURPLE TRIANGLE** shape for the data point.

Area of 3.5 gram poster board = _____

Is this interpolation or extrapolation? _____

5. Find the area of a sample that has a mass of 5 grams. Put this point on your graph using a **RED HEART** shape for the data point.

Area of 5 gram poster board = _____

Is this interpolation or extrapolation? _____

6. Find the mass of a sheet of poster board measuring 7.12 cm by 5.64 cm. Put this point on your graph using an **ORANGE DIAMOND** shape for the data point.

Mass of 7.12 cm by 5.64 cm poster board = _____

Is this interpolation or extrapolation? _____

7. Does your graph show a **DIRECT** relationship or an **INVERSE** relationship for the mass and area of the poster board shapes? Explain your answer.

Part A

Score:	1	2	3	4
Description:	<p>Most data has been completed in the tables. Graph titles do not accurately reflect variables. Data has been drawn on the graph, but may not be completely accurate compared to data table. Graph is not neat.</p>	<p>Most data has been completed in the tables. Graph titles attempt to accurately reflect variables. Data has been drawn on the graph, but may not be completely accurate compared to data table. Graph needs some improvement in neatness.</p>	<p>All data has been completed in the tables. Graph titles are accurate and reflect variables, may use some slight improvements. Data has accurately been drawn on the graph. Graph is neat, but may need some slight improvements.</p>	<p>All data has been completed in the tables. Graph titles are accurate and reflect variables. Data has accurately been drawn on the graph. Graph is neat and needs no improvements.</p>

Part B

Score:	1	2	3	4
Description:	<p>All questions are answered are attempted. Inferred data points are identified on the graph but may not be accurate and/or neatly and clearly.</p>	<p>All questions are answered, may not be thorough, and at least 50% accurate. Inferred data points are somewhat neatly identified on the graph, but some may not be exactly accurate.</p>	<p>All questions are answered thoroughly and at least 90% accurate. Inferred data points are neatly identified on the graph, but some may not be exactly accurate.</p>	<p>All questions are answered thoroughly and 100% accurate. Inferred data points are neatly and accurately identified on the graph.</p>