

PLL 13: Scattering

First: Announcements, Debriefs, Etc.

This Week's System(s)	This Week's Question(s)

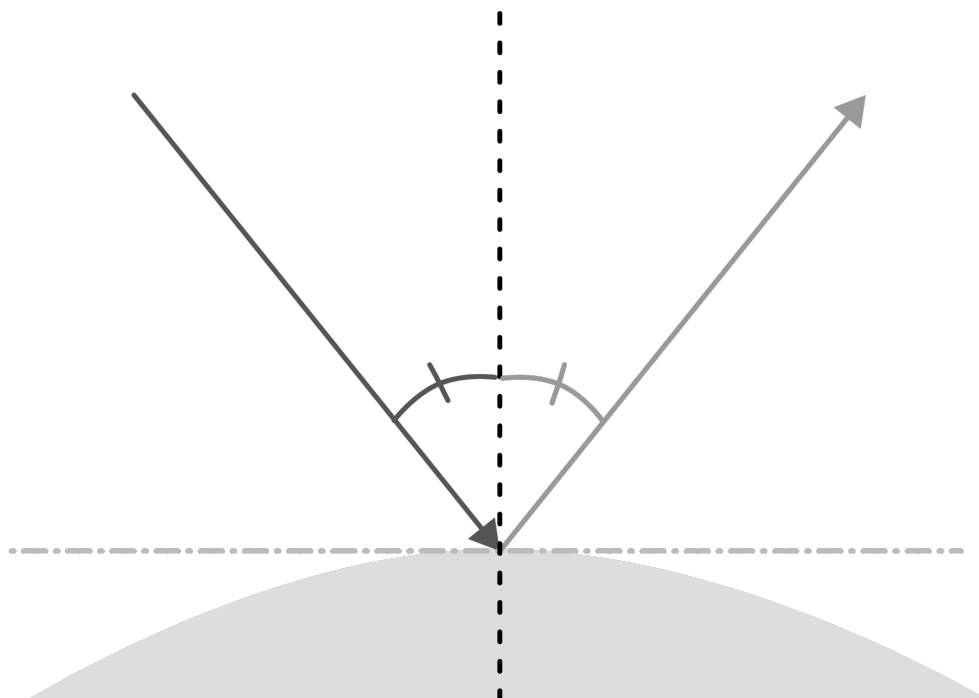
Rutherford Recap

Wee Review: Write down everything you remember about the Rutherford Scattering Experiment — or use diagrams!

Here are some questions to jog your memory:

- What is the plum pudding model?
- What material did Geiger and Marsden use as their target?
- What did Geiger and Marsden shoot at their target?
- What did they expect to see?
- What did they actually see?

Reflection is a type of scattering!



Scattering occurs when _____

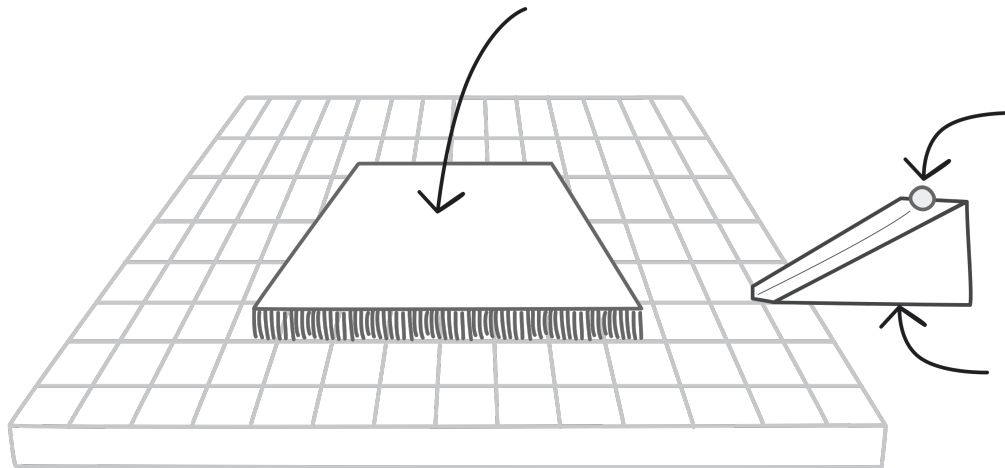
In a reflection event ...

- _____
- _____
- _____

Brainstorm: How could we use multiple reflection events to determine the boundaries of a shape?

Our Experiment

The Apparatus



Procedure

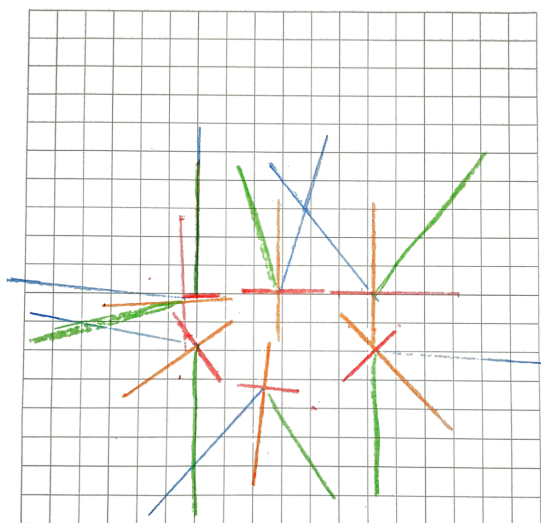
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Data Analysis

Group A's probe

Color Key: Incident Path  Reflected Path  Normal Line  Tangent Line 

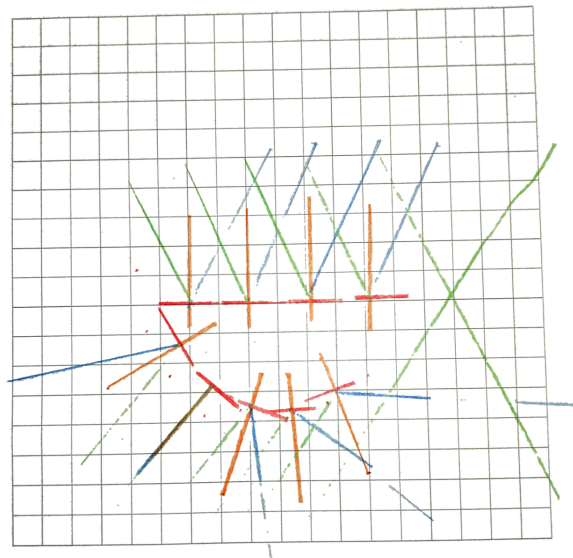
Scale: Square length on apparatus _____ Square length on grid sheet _____



Group B's probe

Color Key: Incident Path  Reflected Path  Normal Line  Tangent Line 

Scale: Square length on apparatus _____ Square length on grid sheet _____



Think-Pair-Share: Compare and contrast group A's data with group B's data. What do you think group B did to get a more well-defined shape?

Calculations at Scale

Your drawings of the shapes are **scale models!!**

This means we can use our data to **calculate the sizes of the hidden shapes!**

The Process

1. Measure your spaces.

(a)

(b)

2. Calculate the scale model's area.

(a)

(b)

3. Scale it up to find the area of the IRL shape!

Formula:

Sample Problem: Calculate the area of the IRL shape in the following scenario:

- The length and width of a grid square on the apparatus are both 5.2 cm.
- The length of a grid square on paper is 0.9 cm; the width is 1.0 cm.
- You've ID'd the shape as a circle. On your paper, the scale model has a radius of 3.2 cm.