

NAME _____

DATE _____

Scenario

A coin rests on a rotating turntable. Angela collects the following data for the distance of the coin from the center (radius): the distance the coin traveled in an arc (S) and the angle in degrees through which the coin rotated.

Use an Equation

PART A: Remember from math class that 2π radians is equal to 360 degrees. Use this fact to fill in the last column in the table.

Analyze Data

PART B: Which trial numbers should Angela use if she wants to create a graph of arc length vs. angle in radians or can all trials be used for the graph?

Trial number(s) _____

Explain why you picked the trials you identified in Part B.

Trial Number	Radius (meters)	Arc Length (meters)	Angle in Degrees	Angle in Radians
1	0.20	0.07	20	
2	0.20	0.10	30	
3	0.20	0.16	45	
4	0.20	0.21	60	
5	0.20	0.26	75	
6	0.35	0.55	90	
7	0.40	0.84	120	
8	0.45	2.83	360	

Using Representations

PART C: Create a graph of arc length vs. angle in radians, sketch a best-fit line, and find the slope (with units) of the best-fit line. (Do not use data points for this calculation.)

PART D: What is the significance of the slope of arc length vs. angle in radians?

PART E: Write an equation for the line with units and include a key for any symbols you use.

