

On Track Learning

A hula hoop is like a racetrack

Activity One

In this activity, you will compare a circle's circumference with its area and a circle's radius with its area.

Materials:

- differently sized hula hoops or other circular object
- string
- meter stick
- masking tape
- chalk
- calculator

Procedure:

- Using the string, determine the diameter of the hoop.
- Calculate the circumference.
- Calculate the area.

Hula Hoop	Diameter	Circumference $C = \pi d$	Area $A = \pi r^2$
1			
2			
3			

Answer the following questions:

1. Using your calculations, what is the relationship between circumference and area of a circle?

2. How much more pizza is there to eat in a 14-inch pizza vs. a 10-inch pizza? (Remember: you measured the diameter of the circle)

Radius	Area = πr^2
14 inch	
10 inch	

Using your calculations from the 14-inch and 10-inch pizza, what is the relationship between the radius and area?

Activity Two

In this activity, you will use different methods to measure the circumference of various hula hoops and evaluate the accuracy of your results.

Procedure:

1. A path has been set up for you. You will use the same path for each step of this lab. Measure the distance of the path in meters.
2. Using the masking tape, mark a location on the hoop that will be the starting point. Place that point on the starting point of the path. Roll the hoop the distance of the path counting the number of complete rotations. On the last rotation determine what fraction or decimal of a rotation the hoop has traveled. (The more precise you are with this step, the more precise your final calculation will be.) Record the mixed number or decimal of the total number of rotations of the hula hoop for the whole path.
3. Calculate the circumference of the hula hoop by dividing the length of the path by the number of rotations of the hula hoop. Record your results on the chart.
4. To assess the accuracy of your measurement and calculations, wrap the string around the circumference of the hoop and mark the string. Put the string in a straight line and use the meter stick to measure the circumference. The closer this measurement is to your calculated circumference, the more accurate your measurements.
5. Repeat steps 1 – 4 for each hula hoop.

Hula hoop	Distance Of path	Number of rotations	Calculate the circumference by dividing the path distance by the # of rotations	Measurement of string
1				
2				
3				

Name _____

Answer the following questions:

1. Calculate the percent of error for each trial. Use the formula:

$$[(\text{calculated circumference} - \text{string measurement}) \div \text{string measurement}] \times 100$$

Show work and results for each trial.

Trial 1:

Trial 2:

Trial 3:

2. On which trial were your results most accurate? What did you do differently on this trial?