

Rolling for Speed

Answer Key

Name: _____

Date: _____

Vocabulary

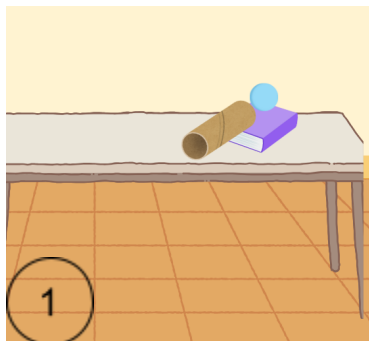
Inclined Plane - a sloping surface created by a plane set at an angle to the ground or another horizontal surface

Speed - measures the rate of motion and can be calculated by dividing the distance traveled by the time of travel

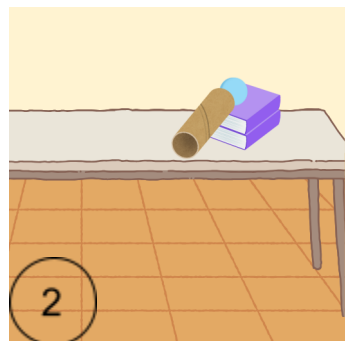
Activity 1

Using the materials provided, construct the **three** different ramps or **inclined planes** shown below.

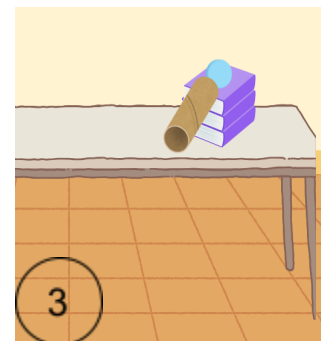
Once the inclined plane is constructed, use a timer to time how long it takes the ball to travel from the top of the inclined plane to the bottom.



Ball Travel Time (seconds):
(Answers will vary based on
constructed inclined planes.)



Ball Travel Time (seconds):
(Answers will vary based on
constructed inclined planes.)



Ball Travel Time (seconds):
(Answers will vary based on
constructed inclined planes.)

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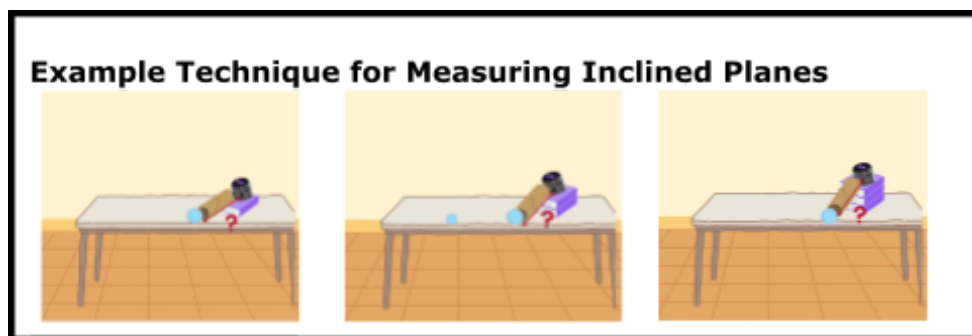
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Activity 2

Using the Ari distance application, measure the distance that the ball traveled along each of the constructed inclined planes. Be sure to position the Ari at the top of the inclined plane and face the sensors in the direction of the ball, placed at the bottom of the inclined plane.



Calculate the speed the ball traveled along each of the three constructed inclined planes using the formula: ***Speed = Distance Traveled / Time of Travel***

Example Calculation - Example Measurements Used

$$\begin{aligned}\text{Speed} &= \text{Distance} / \text{Time} \\ \text{Speed} &= 8 \text{ inches} / 2.1 \text{ seconds} \\ \text{Speed} &= 3.8 \text{ inches/seconds}\end{aligned}$$

1

Inclined Plane #1:

Distance (inches)=

(Answers will vary)

Time (seconds) =

(Answers will vary)

Speed of Ball =

(inch/second)

(Answers will vary)

2

Inclined Plane #2:

Distance (inches)=

(Answers will vary)

Time (seconds) =

(Answers will vary)

Speed of Ball =

(inch/second)

(Answers will vary)

3

Inclined Plane #3:

Distance (inches)=

(Answers will vary)

Time (seconds) =

(Answers will vary)

Speed of Ball =

(inch/second)

(Answers will vary)

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Exit Ticket

Please respond to the following prompts.

1. Question 1: What factors do you believe impacted the ball speed based on your three constructed inclined planes? **The higher the inclined plane the greater the average speed of the ball traveling down the inclined plane.**
2. Question 2: Describe how you would modify one of your constructed inclined planes to increase the speed of the ball. **In my constructed model using a paper towel roll resting on a book, I could increase the number of books stacked on top of one another. This would increase the height of the inclined plane and therefore, the speed of the ball.**