



Science Virtual Learning

# 2nd Grade Force and Motion

Forces in Action: Analyzing Data

April 10, 2020



## 2nd Grade Science

### Lesson: April 10th

### **Learning Target:**

Students will be able to analyze data about force and motion.

## Background: This is a review lesson from 2nd Grade

- Review lessons 1-4 in detail
- Students will use the knowledge gained through lessons 1-4 to analyze data about motion.

### Let's Get Started:

#### Review Videos:

1. [Study Jam: Force and Motion](#)
2. [Move It! Read Aloud](#)
3. [Newton And Me Read Aloud](#)
4. [Why Roller Coasters are Awesome](#)

# Practice #1:

How does mass affect the distance it will travel?

Think back to the book.

- The mass of an object also affects the distance it will travel.
- The more the mass the shorter it would travel

Type of ball	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance
Basketball	24 inches	36 inches	30 inches
Baseball	10 inches	8 inches	12 inches
Tennis Ball	13 inches	17 inches	20 inches



Which type ball rolled the furthest?

Which ball rolled the least?

# Practice #1:

How does mass affect the distance it will travel?



Type of ball	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance
Basketball	24 inches	36 inches	30 inches
Baseball	10 inches	8 inches	12 inches
Tennis Ball	13 inches	17 inches	20 inches

**Which type ball rolled the furthest?** The basketball rolled furthest because it has the least mass.

**Which ball rolled the least?** The baseball rolled the least distance because it has the most mass.

Think back to the book.

- Surfaces with bumps have more friction.
- Smooth surfaces have less friction.

## Practice #2:

### How does friction affect motion?

Ramp Surface	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
<b>Smooth Metal</b>	85 cm	125 cm	90 cm	100 cm
<b>Smooth Wood</b>	90 cm	70 cm	65 cm	75 cm
<b>Rough Sandpaper</b>	18 cm	24 cm	18 cm	20 cm

On which surface does the car travel the furthest? \_\_\_\_\_

On which surfaces does the car travel the shortest distance? \_\_\_\_\_

## Practice #2:

### How does friction affect motion?

Ramp Surface	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
<b>Smooth Metal</b>	85 cm	125 cm	90 cm	100 cm
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On which surface does the car travel the furthest? The car traveled the furthest on the smooth metal surface.

On which surfaces does the car travel the shortest distance? The car traveled the shortest distance on the rough sandpaper.

Think back...

- Ramps help people use less force.

## Practice #3:

### How does the height of a ramp affect motion?

Ramp Height	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance
 Ramp 1 5 inches tall	8 inches	9 inches	7 inches
 Ramp 2 10 inches tall	20 inches	18 inches	19 inches

On which ramp does the car travel the furthest?

On which ramp does the car travel the shortest distance?

# Practice #3:

## How does the height of a ramp affect motion?

Ramp Height	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance
 Ramp 1 5 inches tall	8 inches	9 inches	7 inches
 Ramp 2 10 inches tall	20 inches	18 inches	19 inches

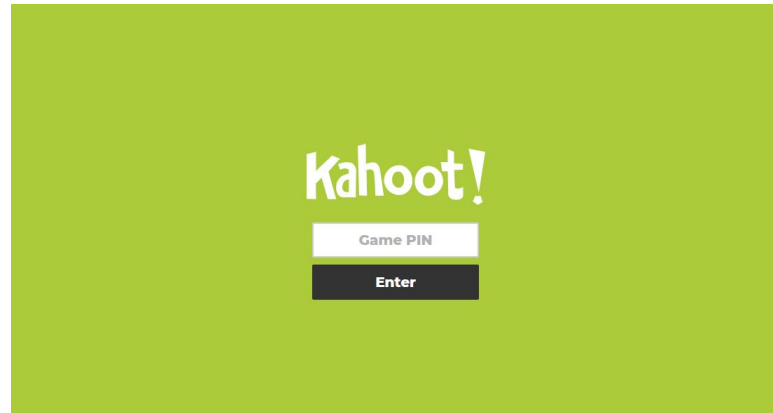
On which ramp does the car travel the furthest? Ramp 2

On which ramp does the car travel the shortest distance? Ramp 1

## MORE Practice on your own:

Go to this website: [Kahoot!](https://kahoot.com)

1. Enter the game code: 094710
2. Press Enter
3. Answer the questions
4. How many did you get correct?



# Practice:

## Complete this page in your packet.

Name \_\_\_\_\_ Date \_\_\_\_\_

**Position and Motion Lab Sheet**

1. Hypothesis: Which ball will travel the greatest distance? Why?

\_\_\_\_\_

\_\_\_\_\_

2. Group Role: Each student should do each job once.

- a. **Ramp Operator:** Student places a ball on the ramp and waits for the Recorder to say, "Release."
- b. **Ruler:** Student measures the distance of each ball.
- c. **Recorder:** Student records the time and distance the ball travels on the lab sheet.

**Record Observations Below**

<b>Tennis Ball</b>	Distance =
Time =	
<b>Golf Ball</b>	Distance =
Time =	
<b>Ping Pong Ball</b>	Distance =
Time =	
<b>Marble</b>	Distance =
Time =	

1. Which ball traveled the farthest?

\_\_\_\_\_

2. Why did the ball travel the farthest?

\_\_\_\_\_

\_\_\_\_\_

Click here to open worksheet.



## Self Check:

Go tell someone in your home your answers.



1. Was this lesson?

- ☐ easy,
- ☐ just right
- ☐ hard

2. Create your own trials! Record your data in a chart like the ones we have used in this lesson.