

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

Group Members: Leader/reader/stumper \_\_\_\_\_  
Timer/recorder/stumper \_\_\_\_\_  
Measurer/retriever/stumper \_\_\_\_\_

# Stomp Rocket Science: Exploring Force and Motion with Stomp Rockets!!

**Problem:** How does the stomping force affect a Stomp Rocket's flight?

**My Hypothesis:** *If* \_\_\_\_\_,  
*then* \_\_\_\_\_

## Materials:

- For groups of three (3) students:
- 1 Stomp Rocket Launcher
  - 2 Stomp Rockets
  - 1 clipboard
  - 1 stopwatch

## Procedure:

1. Decide how your groups will produce a **SMALL, MEDIUM, AND LARGE** stomping force for your launch. You may choose from one of the methods below or you may write your own.

-Select and circle a method from below.

**Method #1: Three-Person Stomp-** Classify your group members by body weight from lightest to heaviest. Each group member will take a turn stomping on the rocket. The lightest person will be responsible for applying the smaller force, medium weight person for the medium force, and the heavier person for the larger force.

**Method # 2: One person stomp-** Pick one person to be the stumper. This person must be able to vary their stomping force. Have them jump up straight to 3 different heights. Small height=Small force, medium height= medium force, large height=large force.

**Method #3: Design your own-** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Using the stopwatch, **time** the Stomp Rocket from the instant you stomp on the launching pad to when it hits the ground. Using the data table on the back of this sheet, record the **time(t)** and the **stomp force(f)** used.

3. Estimate the **distance** your rocket traveled by comparing its landing spot to the marking cones or flags your teacher placed on the field (cones or flags are placed 10 meters apart). Record this **distance (d)** in the data table.

**Stomping Force Data Table**

**Problem:** How does the stomping force affect a stomp rocket's flight?

<b>Trial #</b>	<b>Force (S, M, L)</b>	<b>Total Time (s)</b>	<b>Distance (m)</b>	<b>Dx3.3 = Distance in feet</b>

**Post Launch Questions**

1. Compare the **time in the air** and the **distance traveled** to the **amount of stomp force used**. Do you see a relationship? Explain.

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2. Does the launch speed appears to increase or decreases the force is used? Why?

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3. Describe 2 examples where force and changes in speed are related.

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**Leader: Staple all reports together and turn them in!**