

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

## Trebuchet Launch Activity – How Far Does It Go? Worksheet

### Background

In medieval times, the trebuchet was used as both a weapon and a supply engine because it could launch objects to those in need. The powerful trebuchet has a lever and a pouch attached to hold the objects that will be launched. The object that flies through the air is called a projectile, which travels in a parabolic motion. The formula for the velocity of a flying object is:



$$\text{Velocity} = (\text{the rate of gravity})(\text{the time it takes for a projectile to drop})$$

The rate of gravity = 32.2 feet/ second

### Hypotheses

What object will travel the farthest? Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What if the two objects were the same in regards to the variable? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Which object would go farther base on shape? Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Predict how far you think each object will travel; label your units used (inches, feet, etc.)

Object	Robot 1	Robot 2 (changed arm length)	Robot 3 (changed arm angle)
Eraser			
Ping pong ball			
Chapstick			
Gum Drop			
Paper Ball			
Tennis Ball			

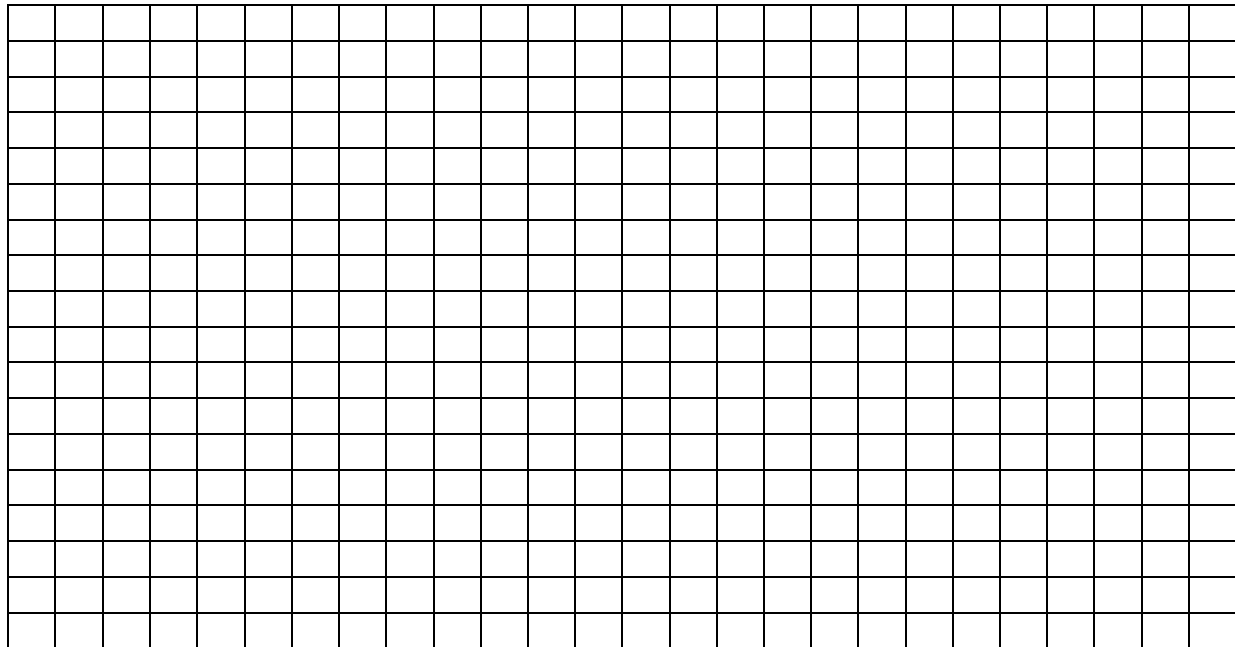
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Data Collection**

Object	Trial 1	Trial 2	Trial 3	Average
Eraser				
Ping pong ball				
Chapstick				
Gum Drop				
Paper Ball				
Tennis Ball				

**Results**

Analyze your data by making a bar graph of your results. Label your graph with the objects along the X axis and your distance along the Y axis.



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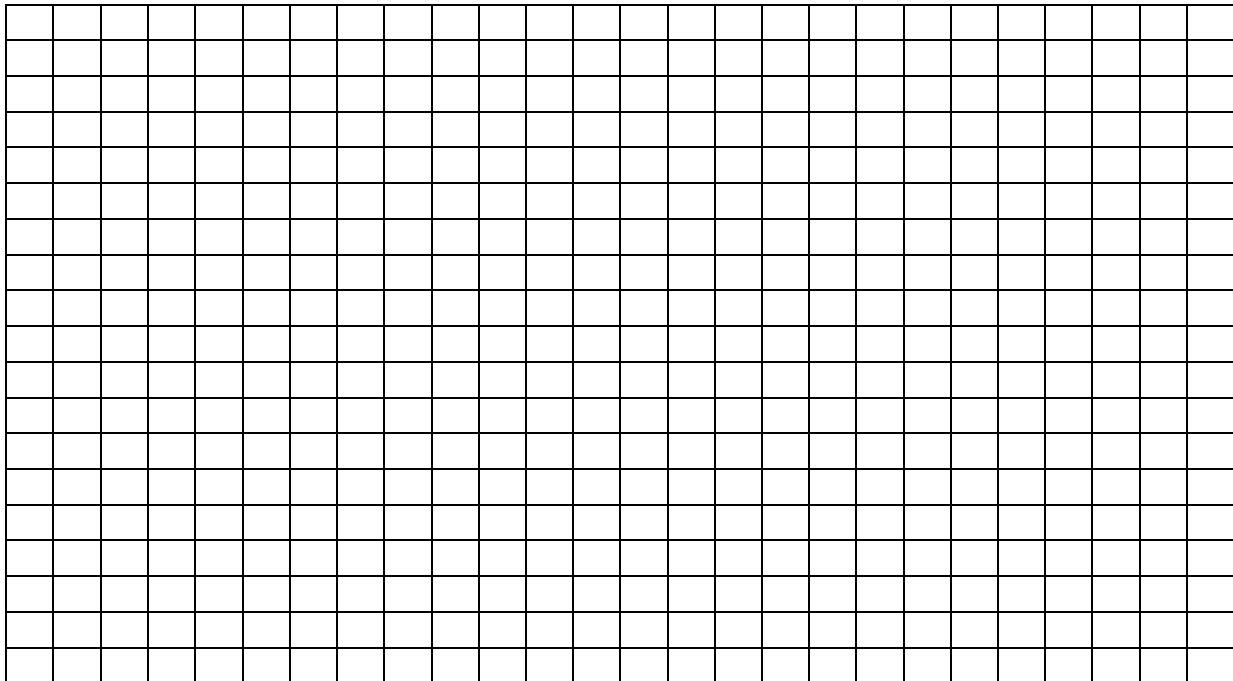
### Data Collection 2

Repeat the same experiments with changing the length of the arm.

Object	Trial 1	Trial 2	Trial 3	Average
Eraser				
Ping pong ball				
Chapstick				
Gum Drop				
Paper Ball				
Tennis Ball				

### Results 2

Analyze your data by making a bar graph of your results. Label your graph with the objects along the X axis and your distance along the Y axis.





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**Follow Up Questions / Conclusion**

Please explain your results?

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What was your hypothesis?

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Was your hypothesis correct? Please explain.

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How could your experiment be better?

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