



# STEM BUCKET TOWER STUDENT PACKET



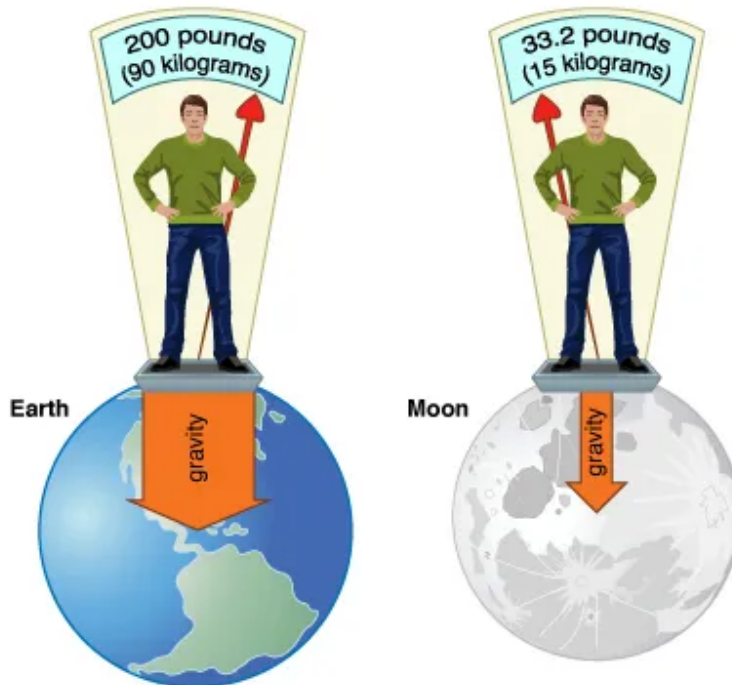
NAME \_\_\_\_\_

SECTION \_\_\_\_\_



# STEM VOCABULARY

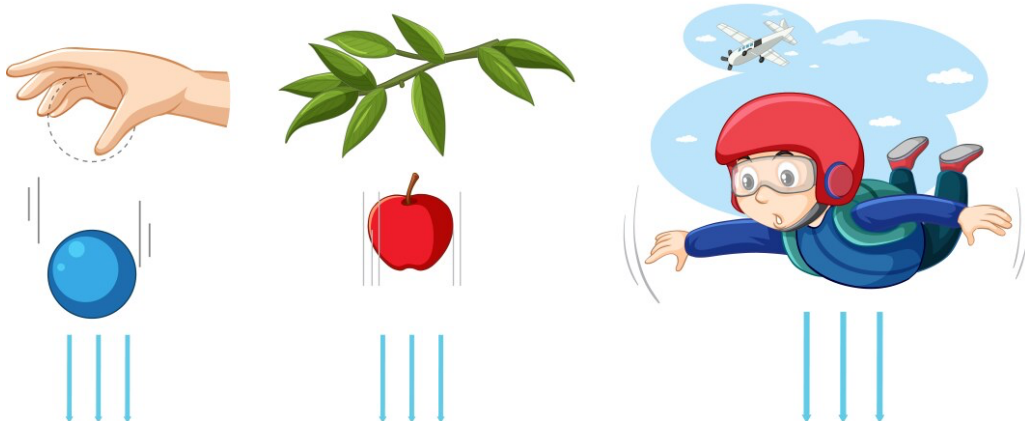
Effect of gravity on Earth versus on the Moon

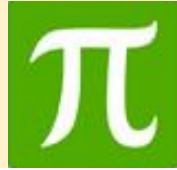


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Images of the Moon and Earth are not to scale

## GRAVITY FORCE





## STEM- Bucket Tower

**Building Background Knowledge**

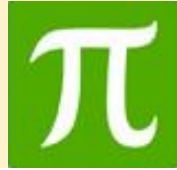
**Working Packet**

**Directions:** Watch a video about how towers are built.

<https://youtu.be/nmzWBeYRWdo?si=1I6varyfpLlob0-2>

### **Respond**

1. What kind of base should any tower have?
2. Why do you think it is important for a tower to have supports?



**Research**

**STEM Apple Head Working Packet**

**Group #** \_\_\_\_\_

**Section:** \_\_\_\_\_

**Student Name:** \_\_\_\_\_

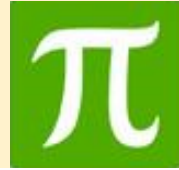
**Partner's Name:** \_\_\_\_\_

\_\_\_\_\_

**Challenge: How can you design, build, and test a load bearing tower that includes a suspended container that will be able to hold at least 20 pennies for a minimum of 10 seconds?**

**Research**

**Directions: Search the internet and find pictures and text about towers.**



**Group #** \_\_\_\_\_

**Section:** \_\_\_\_\_

**Student Name:** \_\_\_\_\_

**Partner's Name:** \_\_\_\_\_

### **Design the Prototype**

(Create a labeled diagram of your prototype.)

#### **Materials**

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Straws</li><li>• 3 ounce cup</li><li>• String</li><li>• Masking tape</li></ul> | <ul style="list-style-type: none"><li>• Scissors</li><li>• Hole puncher</li><li>• Pennies (for testing only)</li></ul> |
|--|--|



Group # \_\_\_\_\_

Section: \_\_\_\_\_

Student Name: \_\_\_\_\_

Partner's Name: \_\_\_\_\_

\_\_\_\_\_

**Test your Prototype - Collect your Data**

**Design #1**

	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
Number of Pennies						
Time						

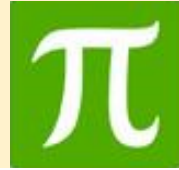
**Design #2**

	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
Number of Pennies						
Time						

**Calculate the average amount of pennies the buckets held.**

**Design 1**

**Design 2**



**Group #** \_\_\_\_\_

**Section:** \_\_\_\_\_

**Student Name:** \_\_\_\_\_

**Partner's Name:** \_\_\_\_\_

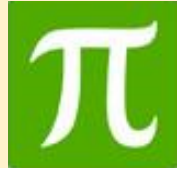
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### **Improve the Prototype**

(Re-design your Prototype. Create a labeled diagram of your improved prototype.)

#### **Materials**

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Straws</li><li>• 3 ounce cup</li><li>• String</li><li>• Masking tape</li></ul> | <ul style="list-style-type: none"><li>• Scissors</li><li>• Hole puncher</li><li>• Pennies (for testing only)</li></ul> |
|--|--|



Group # \_\_\_\_\_

Section: \_\_\_\_\_

Student Name: \_\_\_\_\_

Partner's Name: \_\_\_\_\_

### Reflection Questions

1. In what way did you improve your prototype?

2. Do you expect the improved prototype to pass the challenge?  
Why?

3. What did you learn? Discuss your success or lack of success and reasons for it.





**Make an iMovie** – Use iMovie following the instructions below. Share the presentation on **Seesaw**.

**Instructions:** Create an iMovie using the following parameters:

1. A beginning/opening title with the name of the challenge and the name of each group member
3. At least 3 transitions between segments.
4. 3 pictures of their designs.
5. 1 video of your testing.
6. Video of each person in your group communicating the results of the challenge by sharing the following information:

- what was the project about
- what were the results of the 2 designs when tested
- what did you change in your redesign
- what would you do better