



# Stem Student packet

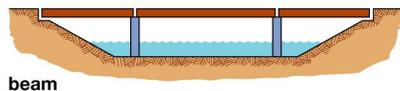
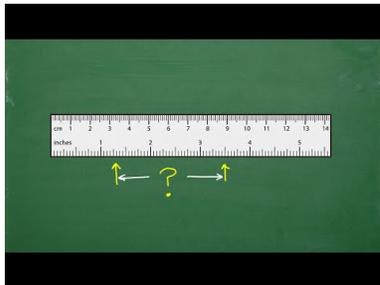


Name \_\_\_\_\_

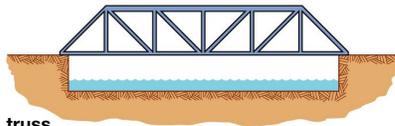
Section \_\_\_\_\_

# STEM Vocabulary

- **Measurement:** The process of determining the size, length, or quantity of an object or space.
- **Length:** The measurement of the dimension from one end of an object to the other.
- **Centimeter:** A metric unit of length equal to one-hundredth of a meter.
- **Weight:** The force exerted on an object due to gravity; often measured in units like grams or pounds.
- **Capacity:** The maximum amount that something can contain or hold.
- **Prototype:** A preliminary model of a design used for testing and refining.



beam



truss



cantilever



arch



suspension



cable-stayed

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## STEM- Build A 30 cm Bridge

Research

Working Packet

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

Section:

Student Name:

Partner's Names:

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**Challenge:** design and construct a 30-cm bridge using index cards, plastic straws, and tape, with the goal of supporting the weight of 50 pennies.

### Research

(Sources: **Science Notebook, Elevate Science Textbook, and/or Discovery Education.** Note the **sources** you used, including **page numbers, titles, and/or links** in the provided space below.)

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

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

**Student Name:**

**Partner's Name:**

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**Give your project a title:**

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**Design the Prototype**

(Create a labeled diagram of your prototype.)

**Materials**

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

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

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

**Partner's Name:**

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**Test your Prototype - Collect your Data**

**Build a 30-cm bridge - Design 1**

- Number of pennies added:
  
- The moment (after how many seconds) the bridge showed signs of stress:
  
- Any observations regarding the bridge's stability during testing:

**Build a 30-cm bridge - Design 2**

- Number of pennies added:
  
- The moment (after how many seconds) the bridge showed signs of stress:
  
- Any observations regarding the bridge's stability during testing:

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

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

**Student Name:**

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**Partner's Name:**

**Improve the Prototype**

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

**Materials**

**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 a Ketnote**

Use Keynote to create a presentation following the instructions below:

### **Parameters:**

- At least five slides with colorful background.
- A title slide with the group number and team members.
- Name the type of bridge you are designing and write its characteristics.
- Five pictures of your design
- 2 videos for testing (trial 1, and trial 2)
- 1 recorded audio explaining if your prototype worked and what could you do differently to improve the design's stability and weight-bearing capacity.