

STEM Challenges

Bucket Towers

Challenge:

- Build the tower with a suspended bucket that holds the most weight.

Supplies:

- Straws
- 3 oz. Cups
- String
- Masking Tape
- Scissors
- Hole Punch (If wanted)
- Weights (Or something to measure with- pennies, washers, etc)



Constraints:

- Only use supplies provided.
- Cup must be suspended.
- Time

Instruction:

- Provide teams with supplies to view.
- Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
- Teams use supplies to build their model.
- Teams get 15-20 minutes to build their structure.
- Teams use weights (or measuring items) during the time to test and redesign their structure.
- When time is over, have the class observe the testing of all final structures.
- Record the structure strengths.
- Have students reflect on the challenge, either in an oral discussion or in a quick write in their science (STEM) notebook.

Tips:

- Can put holes in cups ahead of time if you would like.
- Can limit the amount of tape given to students.

Resources: [TeacherPayTeacher Lesson](#)

STEM Challenges

Catapults (Pom Pom Blasters)

Challenge:

- Build the catapult that launches the item the longest distance.
(There are many different versions of this challenge.)

Supplies:

- Cup
- Popsicle Sticks (straws also if wanted)
- Rubber Bands
- Yarn or String
- Paper Clips
- Index Cards
- Scissors
- Tape
- Pom Pom (or something to launch- marshmallow, army man, etc.)
- Measuring Tape

Constraints:

- Only use supplies provided.
- Do not have to use all the supplies.
- The structure must be free-standing.
- Time

Instruction:

- Provide teams with supplies to view.
- Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
- Teams use supplies to build their model.
- Teams get 15-20 minutes to build their structure.
- Teams use test areas & measuring tape during the time to test and redesign.
- When time is over, have the class observe the outcome of all final designs.
- Record the launching distances.
- Have students reflect on the challenge: orally or in a quick write in their science notebook.

Tips:

- This challenge can be completed with different resources.
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STEM Challenges

Spaghetti Tower

Challenge:

- Build the tallest freestanding tower.

Supplies:

- Spaghetti Noodles
- Cup of Mini Marshmallows
- Scissors
- Measuring Tape (or ruler)

Constraints:

- Only use supplies provided.
- Do not have to use all the supplies.
- The structure must be free-standing.
- May not use the cup in the structure.
- Time

Instruction:

- Provide teams with supplies to view.
- Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
- Teams use supplies to build their model.
- Teams get 15-20 minutes to build their structure.
- Teams measure structure during time and redesign.
- When time is over, have the class observe the measurement of all final designs.
- Record the tower heights.
- Have students reflect on the challenge: orally or in a quick write in their science notebook.

Tips:

- There are different versions of this challenge.



STEM Challenges

Boats

Challenge:

- Build the boat that will hold the most weight.

Supplies:

- Foil
- Tape
- Wax Paper
- Plastic Wrap
- Foam (if wanted)
- Cups
- Straws
- Scissors
- Water Tubs
- Weights (Or something to measure with- pennies, washers, etc)



Constraints:

- Only use supplies provided.
- Do not have to use all the supplies.
- Time

Instruction:

- Provide teams with supplies to view.
- Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
- Teams use supplies to build their model.
- Teams get 15-20 minutes to build their model.
- Teams use water tubs to test models during time and redesign.
- When time is over, have the class observe the final designs.
- Record the strength of the boats.
- Have students reflect on the challenge: orally or in a quick write in their science notebook.

Tips:

- There are different versions of this challenge using different resources.
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STEM Challenges

Marble Run

Challenge:

- Build the marble run will have the furthest traveling marble.

Supplies:

- Paper Tubes
- Cardboard
- Scissors
- Tape
- Measuring Tape

Constraints:

- Only use supplies provided.
- Do not have to use all the supplies.
- Time

Instruction:

- Provide teams with supplies to view.
- Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
- Teams use supplies to build their model.
- Teams get 15-20 minutes to build their model.
- Teams use the time to test their model and redesign.
- When time is over, have the class observe the final designs.
- Record the marble distance for each marble run.
- Have students reflect on the challenge: orally or in a quick write in their science notebook.

Tips:

- There are different versions of this challenge using different resources.



STEM Challenges

Hammock

Challenge:

- Build the hammock that will hold the most weight.

Supplies:

- Fabric Strips
- Felt Pieces
- Newspaper
- Heavy Weight Paper
- Rubber Bands
- String
- Tape
- Scissors
- Measuring Tape or Rule
- Weights (Or something to measure with- pennies, washers, etc)



Constraints:

- Only use supplies provided.
- Do not have to use all the supplies.
- Hammock must be between 7x7 and 10x10 inches.
- Hammock must be hanging.
- Time

Instruction:

- Provide teams with supplies to view.
 - Teams draw their designs before building. (Whiteboards, Paper, iPads, etc)
 - Teams use supplies to build their model.
 - Teams get 15-20 minutes to build their model.
 - Teams use the time to test their model and redesign.
 - When time is over, have the class observe the final designs.
 - Record the strength of each hammock.
 - Have students reflect on the challenge: orally or in a quick write in their science notebook.
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