

Taking Time for Teamwork

Spanning a Distance

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Paper Bridge

Challenge

Build a newspaper bridge that can support the most pennies.

Supplies

- 4 sheets of newspaper
- 2 thick books to rest the bridge on
- pennies for measurement

Requirements

1. All supplies must be used.
2. The bridge must be completed within the time limit.
3. The bridge must be freestanding, meaning you cannot hold it, and it cannot lean on anything.
4. The bridge's ends must rest on the two thick books and the center must be suspended.

Testing and Scoring

Group goal – Each bridge should hold at least ten pennies.

- Pennies will be added by a member of the team no faster than one every second.

Scoring – The bridge that holds the most pennies will be considered the winner.

- The score will be determined by the number of pennies set on the bridge immediately before the bridge breaks, touches the floor, or is no longer touching the books.

Teacher Notes

- If the newspaper is ripped or ruined during building, feel free to trade the paper to give the students a second chance.
- This activity is good to do before **Suspension Bridge** (page 13), because students will be able to build on their experience from this lab to be more successful with the next bridge.
- At the end of the activity, have students salvage as many of the unused or unbroken supplies as possible for use in other classes or for other activities.



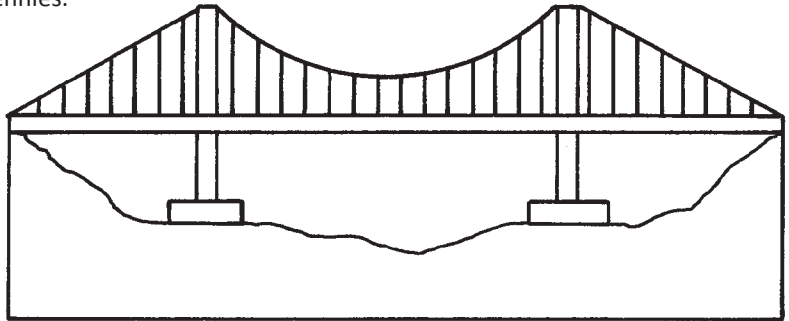
Suspension Bridge

Challenge

Build a suspension bridge that can hold the most pennies.

Supplies

- 1 toilet paper tube
- 8 straws
- 4 rubber bands
- 5 index cards
- 8 cotton swabs
- 100 cm of yarn
- 50 cm of tape
- 3 metal poles per group (ring stands work well)
- 2 books to rest the bridge on
- pennies for measurement



Requirements

1. The bridge must be completed within the time limit.
2. The bridge must be freestanding, meaning you cannot hold it, and it cannot lean on anything.
3. The bridge's ends must rest on the two thick books and the center must be suspended.
4. The bridge must be at least 40 cm long.
5. Poles will be placed at the beginning, middle, and end of the bridge.
6. The poles may be placed anywhere along the 40 cm, but all three must be used.

Testing and Scoring

Group goal – Each bridge should hold at least ten pennies.

- The pennies will be added by the team and will be added no faster than one penny per second.
- Pennies may be placed anywhere on the bridge that is at least 5 cm from either book.

Scoring – The bridge that holds the most pennies will be considered the winner.

- The score will be determined by the number of pennies set on the bridge immediately before the bridge breaks, touches the floor, or is no longer touching the books.

Teacher Notes

- Give each group five pennies to use for practice.
- This activity is good to do with **Paper Bridge** (page 12) because students will be able to build on their experience to be more successful with this bridge.
- At the end of the activity, have students salvage as many of the unused or unbroken supplies as possible for use in other classes or for other activities.

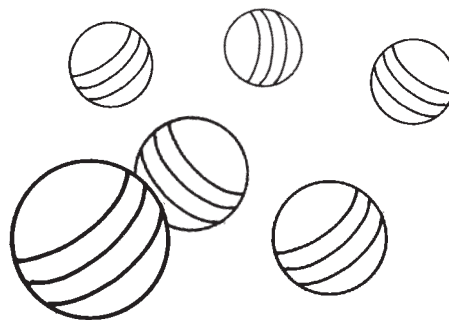
Moving Marbles

Challenge

Build a contraption to move the most marbles from one table to another in 30 seconds without touching the marbles.

Supplies

- 2 meter sticks
- 3 large paper clips
- 30 cm of masking tape
- 8 ½" x 11" sheet of paper
- 5 cm x 5cm block of clay
- marbles
- 2 tables of the same height, placed 95 cm apart



Requirements

1. All supplies must be used.
2. The contraption must be completed within the time limit.
3. The structure must be freestanding, meaning you cannot hold it up and it cannot lean on anything.

Testing and Scoring

Group goal – Each team should try to move at least five marbles.

- Marbles may not be touched in any way after being released.
- Marbles that make it to the other table, and haven't been touched, before the 30 seconds are up will be considered successful attempts.

Scoring – The contraption that moves the most marbles will be considered the winner. If there is a tie, the two teams will have an additional 15 seconds to move more marbles.

Teacher Notes

- Give each group one marble to use for practice (make sure groups know what their marble looks like, as they tend to roll away while the students are practicing).
- Have two bowls to hold the marbles. One bowl will be for the students competing to grab from, and one bowl will be for the marbles collected during the competition.
- Since marbles are known to go everywhere, have students not competing stand around the tables and collect marbles as they fall.
- At the end of the activity, have students salvage as many of the unused or unbroken supplies as possible for use in other classes or for other activities.