



How much can your cardboard bridge hold?

Grades 3-5 | Activity: about 35-45 minutes | Preparation: about 15 minutes, plus a quick trial

THE CHALLENGE

Build a cardboard bridge, add matching classroom objects one at a time, then change one design feature and test again. Use the paper leaves on page 3 for decoration, not as the test weight.

GATHER YOUR MATERIALS

Clean, pre-cut cardboard; masking tape; ruler; pencils; two stable, equal-height supports; and a set of identical load items. Add plain paper and coloring supplies for optional leaf decorations.

USE WHAT YOU HAVE

Try coins of one denomination, identical small blocks, or other matching classroom items that are small, stable and teacher-approved. Use one type and the same set for both tests. Avoid rolling, sharp, fragile or heavy objects; supervise small items as appropriate for your students.

TRY IT BEFORE CLASS

Start with a 15 cm gap on a tabletop. Cardboard varies greatly: test your chosen piece and load first, then set a manageable item limit for the class. If it is too rigid, try thinner cardboard or adjust the gap before class. Keep that setup fixed for both student tests. Do not keep adding heavier objects just to force a collapse.

BUILD, TEST, IMPROVE

1. Give each team similar cardboard and the same amount of tape. Sketch for about 5 minutes, then build for about 10 minutes.
2. Add one item at a time near the center, in a consistent placement pattern. Record the count and any bending or slipping. Stop at the teacher-set limit, loss of support, or an unstable stack; record why you stopped.
3. Make one design change using the original materials. Repeat with the same gap, supports, items and placement. Explain what changed.

A BRIDGE DOES NOT HAVE TO COLLAPSE

If both designs reach the limit, compare bending, stability and your observations at the same item count. That is a useful result too. Count is only comparable when the load items match; do not compare a coin count with a block count.

MAKE IT WORK FOR YOUR CLASS

Teachers manage cardboard cutting. Keep tests low on a tabletop and use only small loads. Offer pre-cut leaves, a partner scribe or oral explanations. Keep decorations away from the test area and the same in both tests. The teacher trial determines a suitable load and limit; this guide does not claim a tested load capacity.



Build. Test. Improve.

Team / names: _____ Date: _____

Our question: How does one design change affect our cardboard bridge?

KEEP THESE THE SAME

Gap: _____ cm Load item: _____ Teacher-set limit: _____ items

Supports / cardboard / tape / placement pattern: _____

Put each load item near the center; use the same set and placement in both tests.

FIRST DESIGN: SKETCH YOUR BRIDGE

TEST 1: RECORD WHAT HAPPENED

Items held before stopping: _____ Why we stopped: _____

Bending, slipping or other observations: _____

OUR ONE CHANGE AND WHY WE CHOSE IT

TEST 2: RECORD WHAT HAPPENED

Items held before stopping: _____ Why we stopped: _____

Bending, slipping or other observations: _____

WHAT DOES OUR EVIDENCE SHOW?

Compare at the same item count. If both reached the limit, describe bending and stability.

What changed? What would we try next?



A little fall color for your bridge

Print on plain paper. Color, cut and decorate. These leaves are decorations, not test weights. Use the same decorations for both tests and keep the center clear for the load.

Teacher tip: pre-cut the leaves or let students draw their own. Attach to the sides of the supports or use around the tabletop display.

