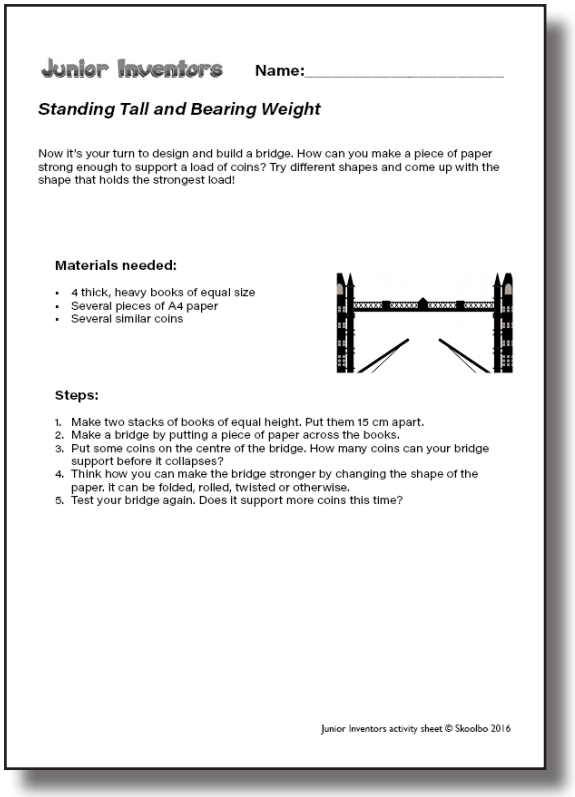
Standing Tall and Bearing Weight



Junior Inventors Name:_____

Standing Tall and Bearing Weight

Now it's your turn to design and build a bridge. How can you make a piece of paper strong enough to support a load of coins? Try different shapes and come up with the shape that holds the strongest load!

Materials needed:

- 4 thick, heavy books of equal size
- Several pieces of A4 paper
- Several similar coins

Steps:

1. Make two stacks of books of equal height. Put them 15 cm apart.
2. Make a bridge by putting a piece of paper across the books.
3. Put some coins on the centre of the bridge. How many coins can your bridge support before it collapses?
4. Think how you can make the bridge stronger by changing the shape of the paper. It can be folded, rolled, twisted or otherwise.
5. Test your bridge again. Does it support more coins this time?

Junior Inventors activity sheet © Skoolbo 2016

Lesson Sequence:

Provocation: Watch the video of "Beautiful Bridges Around The World". Ask students to describe one or two bridges they saw before.

Tuning In: Compare the different kinds of bridges.

Finding Out: Read the article and watch the bridge building video together.

Activity: Have students design their own bridge.

Classroom presentation: Each student presents their design ideas and see whose bridge supports the most number of coins.

TIPS TO SUPERCHARGE YOUR LESSON

Forces: compression and tension

Compression: Have students work in pairs and tell them to stand face to face. Gently press their palms together at about shoulder height (as in a "high five"). Ask them to describe their feeling.

Tension: Next, have student pairs grab hands and gently pull in opposite directions. Ask them to describe their feeling.

Shapes and forces

A structure stands or falls as forces push (compression) or pull (tension). The shape of a structure affects how strong it is. The most common shapes used to building big structures are rectangles, arches, and triangles. Find out why triangle is the strongest shape from this video:
http://www.pbs.org/wgbh/buildingbig/lab/shapes.html

You can find the article to accompany this lesson on: www.juniorinventors.com