



Berkshiremuseum

Alexander Calder: An Artist at Play

Pre & Post Visit Activity

Simple Machine Challenges

1

Challenge: Use object A to lift object B, using only one hand.
(you can use more than one hand to set up)

Materials: one ruler
one square crayon
object A: should be smaller than object B, and very difficult to
balance anything on. For example, a small plastic
dinosaur with a long neck works well.
object B: should be larger than object A.

2

Challenge: Make your bead travel at least three feet in a straight line,
without leaving your spot.

Materials: one bead: the hole should allow the bead to slide snugly onto the
pencil and the bead should have a smaller diameter
than the spools
one pipe cleaner
one pencil
two spools that will slide onto the pencil
a yard stick to measure the distance of three feet

3

Challenge: Start with your egg at least 1 foot above the ground.
Lower the egg to the ground without touching it and without breaking it.

Materials: masking tape
toilet paper tubes
scissors
one egg (hardboiled)

4

Challenge: Make the cotton ball fly through the air without using your arms (or legs) to throw it.

Materials: masking tape
one ruler
one cotton ball
one or more rubber bands
one plastic spoon

5

Challenge: Pick up your fish and lower it back to the ground, while standing 3 feet away from the fish. You may attach things to your desks or chairs.

Materials: a few washers
one small magnet
tape
one paper fish
one piece of string 6 - 7 feet long
2 pipe cleaners

Some Possible Solutions:

Here are some solutions that students may devise, though this is certainly not an exhaustive list, as this is an open-ended activity. Students should be encouraged to test out creative solutions.

- #1** With the crayon placed perpendicularly under the ruler, the ruler becomes a lever. By placing object B on one end, and then placing object A on the other end, object A can lift object B. It will work regardless of which object is heavier, though they should not be greatly different in weight. The key is to play with the placement of the fulcrum (which is determined by the placement of the crayon).
- #2** The bead can be placed on the pencil, in the center, with one spool on either side, with the pipe cleaner used to hold things in place. The wheel and axle will then carry the bead.
- #3** The toilet paper tubes can be cut in half lengthwise and then taped together to create a chute for the egg that acts as an inclined plane, allowing a slow, gentle ride to the ground for the egg.
- #4** Various types of catapults can be created with these materials. For example, the plastic spoon can be laid on top of the ruler, with the handle overlapping the ruler and the curved part hanging off the end. Rubber bands can then be wrapped around the middle of the spoon, so that the cotton ball can be placed in the curved part of the spoon and launched through the air.
- #5** The magnet can be taped to the paper fish. The washers can then be attached to the string. By creating loops out of the pipe cleaners and attaching them to the side of a table or the back of a chair, a pulley system can be created, with the washers at one end of the string, and with the string then running up and through the loops, and back to the student who can pull on the string to lift the fish, and then let it back down again.