



# Treasure Grab

## 1

Here's what you'll need to build your own Treasure Collector!

- Stiff paper or cardboard (e.g., an index card or piece of a cereal box about 3 inches by 5 inches)
- 1 drinking straw
- Tape
- Scissors
- 20 feet of string
- 1 magnet
- 10 small metal objects (washers, nuts and bolts, paper clips, thumbtacks, etc.)



## 2

Build a slider

- Cut two pieces of straw about an inch or two long.
- Tape them to the card at an angle. Make sure they slant toward the center of the card's front edge.
- *TIP: If the straws keep coming loose... Make sure the tape tucks around the straw as much as possible before you connect it to the cardboard.*



# 3

## Loop the string

- Loop the string around a part of a table or chair. (The slider moves best if the loop's strings are close together, such as 2 or 3 inches apart, rather than spread 5 or 6 inches apart.)
- For an easier game, loop the string around something so the string is close to the floor. For a harder game, loop the string around something that's a foot or two above the floor.



# 4

## Thread the slider onto the string

- Decide if you want the strings to run on top of the slider or across the bottom (i.e., straws facing up or straws facing down). Feed the end of one string through the top of a straw.
- Repeat, feeding the end of the other string through the top of the other straw.
- *TIP: If the string is hard to thread through the straw... Wrap a small piece of tape around the end of the string. This makes it stiffer, like a shoelace, and it will be easier to push through the straw.*



# 5

## Move the slider

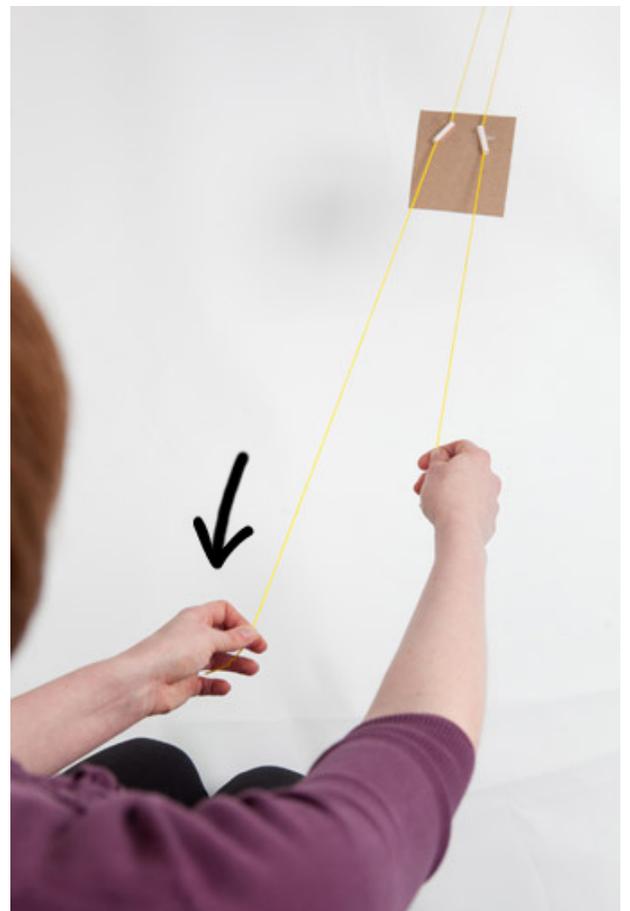
Move the slider forward by first pulling one string.



# 6

## Move the slider (cont'd)

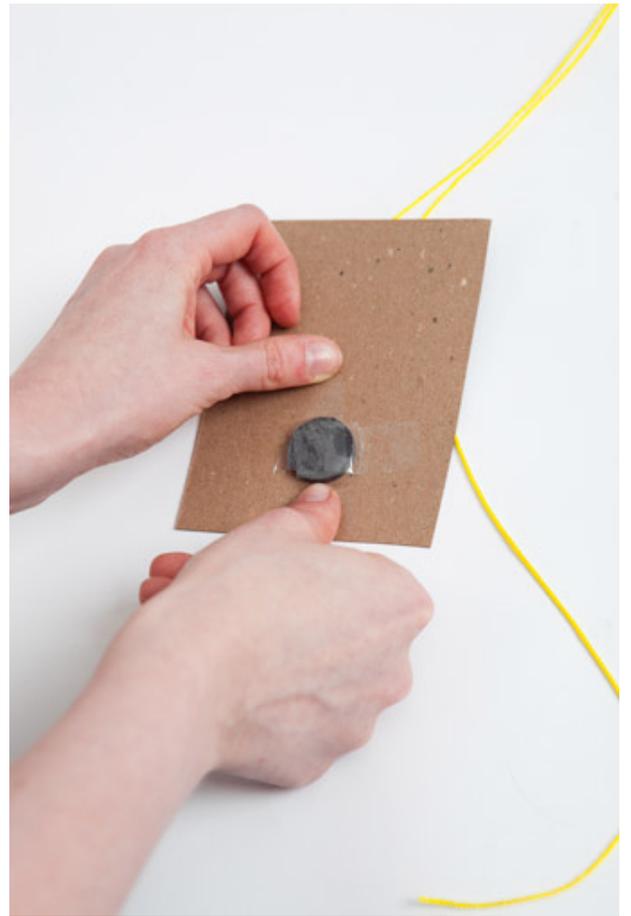
- Then pull the other string.
- Want the slider to go backwards? Tie a new string to it, so you can pull it back toward you.
- *TIP: If the slider doesn't move well... First, make sure the straws are at a good angle (diagonal). Next make sure you threaded the slider with the straws pointing the right way. (The front of the slider is where the straw tips are closer together.) Finally, be sure you are pulling only one string at a time. One should be tight while the other one is loose.*



# 7

## Make your slider magnetic

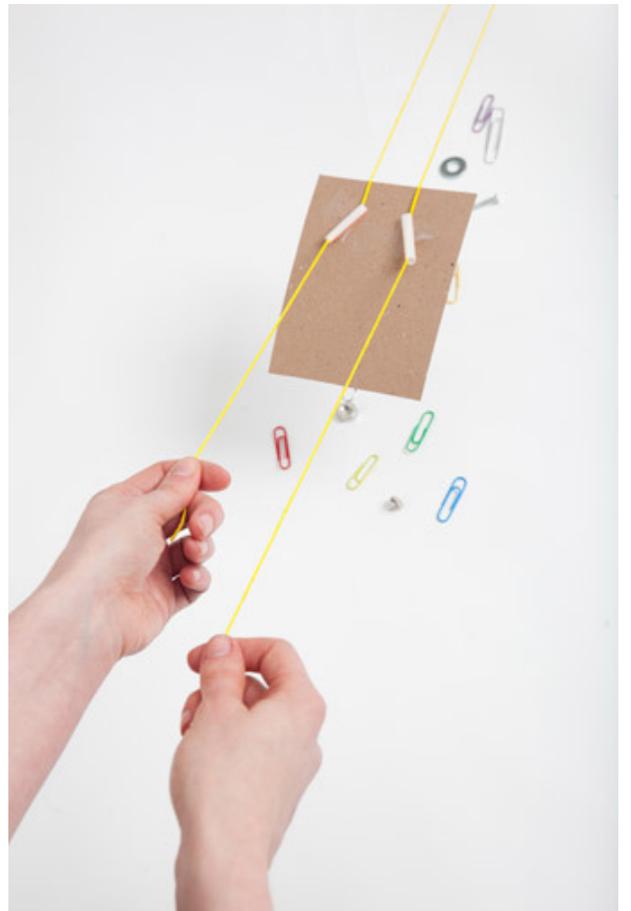
- Decide on the best place to attach a magnet. Near the front? Back? On the top? Bottom?
- Tape the magnet onto the slider.



# 8

## Set up for the *Stick With Me* game

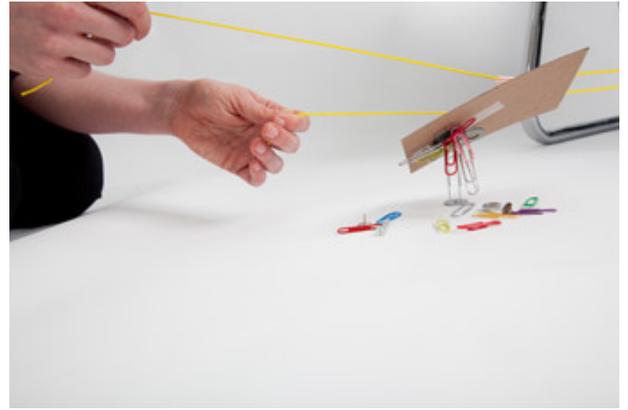
Scatter a collection of small metal objects on the floor below the string.



# 9

## Play *Stick With Me*

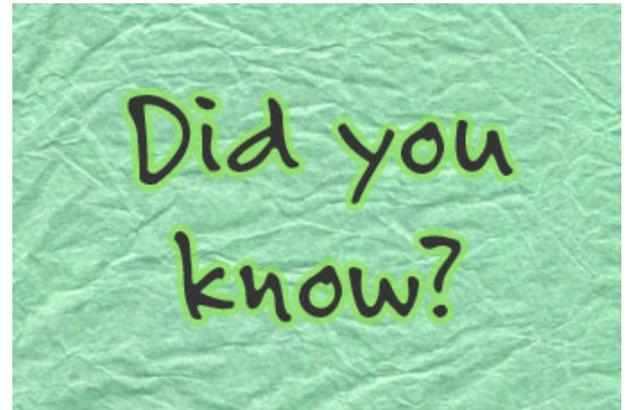
- Move your slider along the string. When the magnet is over a metal object, pick it up by relaxing the string. Keep picking up objects until you get to the finish line.
- The winner is the person who delivers the most objects to the finish line in a set amount of time.
- Make the game harder. For example, it's harder if you stand or if you loop the string around a part of the chair that's a foot or two above the floor.



# 10

## Did you know?

The secret to moving the slider is lots of **friction**—a force that resists motion. When you pull a string, the slider twists. This forces one of the straws to turn and lock onto the string. The friction between the turned straw and its string keeps it from sliding. By first pulling one string and then pulling the other, you can make the slider move forward.



# 11

## Try this next!

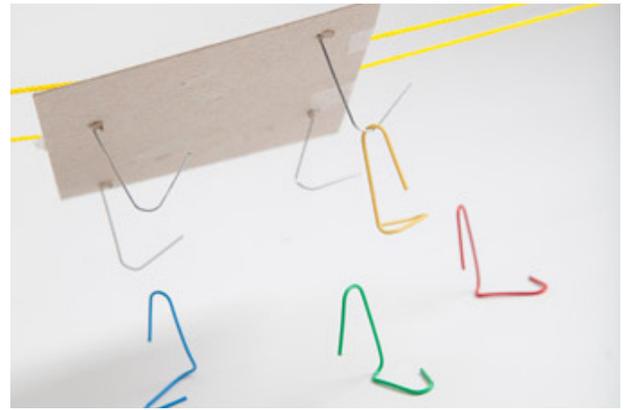
- **Crazy Climber.** The slider can go across, but it can also go up. Loop the string over something high, like a basketball hoop, coat hook, or tree branch. Pull the strings to make the slider climb. To make sure the slider will slide back down once you stop pulling, tape on a weight, like a washer, pebble, or coin.
- **Decorate your slider.** Create a character, like a surfer or skateboarder. Tape it to your slider and send it across the room.
- **Build it bigger.** How big can you go? With cardboard, plastic pipe, and rope, can you make a delivery system to haul supplies up to a tree house?



# 12

## Try more games!

**The Claw.** This game is similar to Stick With Me, but instead of magnets, the slider uses hooks (i.e., claws) that hang down to pick up objects. You'll need about ten big paper clips. Bend four of them open, poke them through the cardboard, and tape them in place. To play, move and dip the slider to hook the targets—paper clips bent so they have a loop sticking up. The claws grab the target paper clips by hooking them.



# 13

## Try more games (cont'd)

- **Dumpster Diving (pictured).** Tape a small paper cup onto the top of the slider. Place a paper clip (or marshmallow, pom-pom, or small ball) inside. Move the slider until it's over a target (e.g., a second paper cup sitting on the floor below the string). Flip the slider to drop the paper clip into the target cup. For an extra challenge, try balancing something like a toy on the slider without a cup. Can you make it all the way down the string without dropping the toy?
- **Races.** Set up two sliders side by side. Who can go faster? Who can collect more objects and get to the finish line first?



PROJECT FUNDING



ADDITIONAL FUNDING

