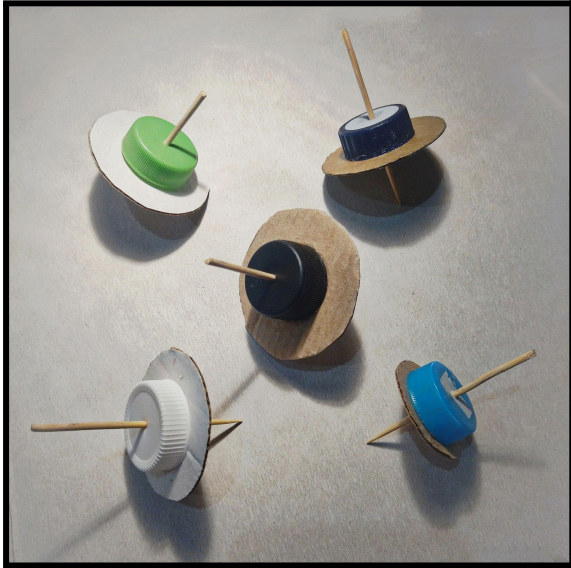


Activity 1: Let's start from the top!

Instructions on making a spinning top



For reference, you can use the tutorial:

[How to make spinning top with bottle cap | Cardboard crafts](#)

What you'll need (Materials):

- Flat, smooth surface
- A cardboard disc, with a diameter between 4 and 12 cm (1.5 and 5 in)
- Pen or fine-tipped marker
- Wood surface to use to hammer the nail through the bottle cap
- A very thin nail (a $1 \frac{3}{8}$ -in nail, approximately)
- Hammer
- Double-sided tape
- Bottle caps - light colored so markings show (size: 10 oz to 1-liter bottle caps)
- Cooking skewers (10 cm, or 4 in, in length)
- Scissors
- Snippers

What you'll do (Directions):

1. Take the cardboard disc. Make a mark at the center of the disc and make sure you can see it.

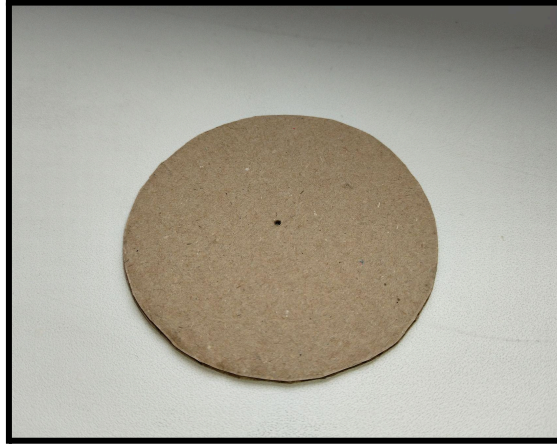


Image 1. Cut out a cardboard disc and mark the center.

2. Take a bottle cap of your choice.
3. Determine the middle of the cap and make a mark on the top of the cap.



Image 2. Mark the center on the top of the bottle cap.

4. Take a nail and a hammer, place the bottle cap on a block of wood and punch the nail through the middle of the bottle cap. Make sure the puncture is straight.
5. With the nail in the hole, move the nail around in a wide circle to enlarge the hole, trying to keep it symmetrical and making a hole that will hold the skewer firmly. Remove the nail.



Image 3. Punch a hole through the center of the cap.

6. Carefully press the pointed side of a skewer through the hole in the top. **Take care the skewer doesn't break or jab your hand.** It should be quite tight. Check to see that the skewer is upright. Push the skewer into the bottle cap at about the thickest part of the skewer. You should have about 4 cm of the skewer showing through the bottom of the cap.



Image 4. Push the skewer into the hole in the bottle cap.

7. Take the cardboard disc you have cut out and carefully punch a hole where you have marked the center. You can use the tip of the nail to gently push through.
8. On one side of your cardboard disc, place double sided tape on either side of the hole in the center, large enough for your chosen bottle cap to sit on the tape.

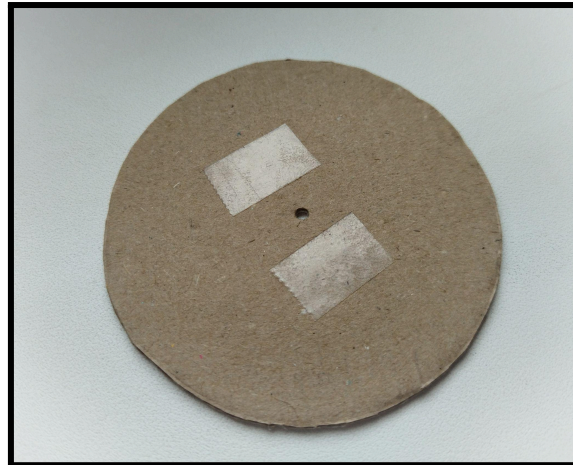


Image 5. Place double-sided tape on the cardboard disc.

9. Take your bottle cap with the skewer in it, gently press it through the cardboard disc so that your bottle cap sits on the double-sided tape on your disc. Firmly press the bottle cap and the disc together.



Image 6. Cardboard disc with tape and bottle cap on the skewer (not pressed together yet).

10. Continue pushing the skewer through the cardboard disc until it extends about 3 cm or 1 inch **BELOW** the cardboard disc with the bottle cap on it.

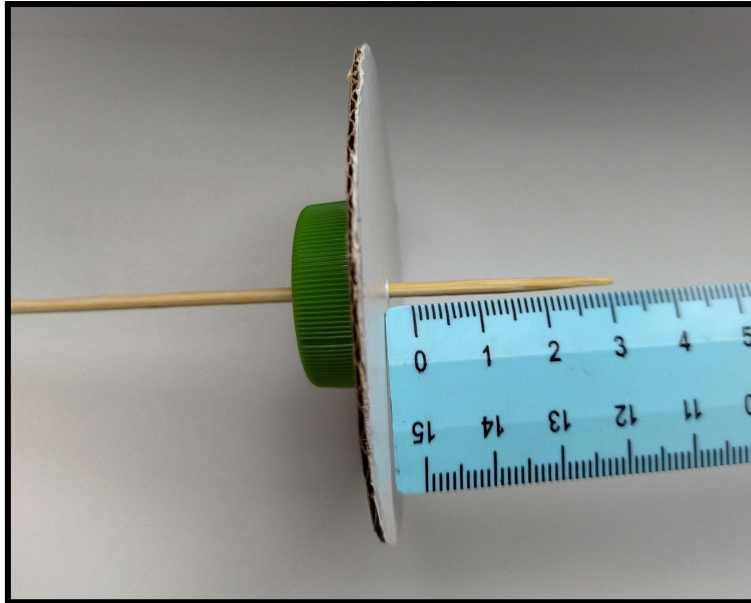


Image 7. Put the cardboard disc on the skewer, under the bottle cap, and press the cap and disc together. Move them together, so that there is 3 cm of the skewer below the disc.

11. Use snippers to trim your skewer **ABOVE** the bottle cap so that it is about 2 cm or $\frac{3}{4}$ inch above your bottle cap.

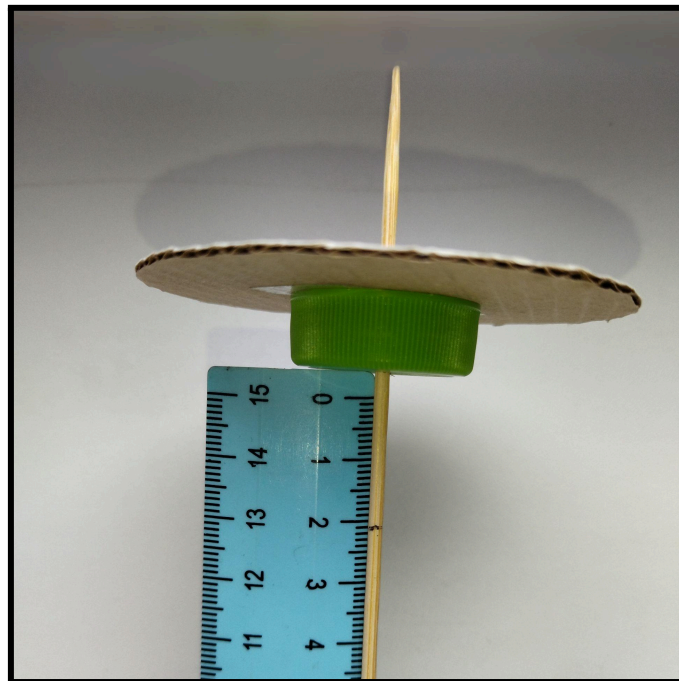


Image 9. Measure 2 cm above the cap and clip the skewer.

12. Without bending the cardboard disc, again, firmly press the bottle cap into the double sided tape on your cardboard disc top.
13. Find a smooth, flat surface and, setting the top gently on the surface, quickly twirl the skewer end extending out of the bottle cap as fast as you can while you let it go. Try a few times to get the longest duration spin for your top.
14. Congratulations! You've made a spinning top!

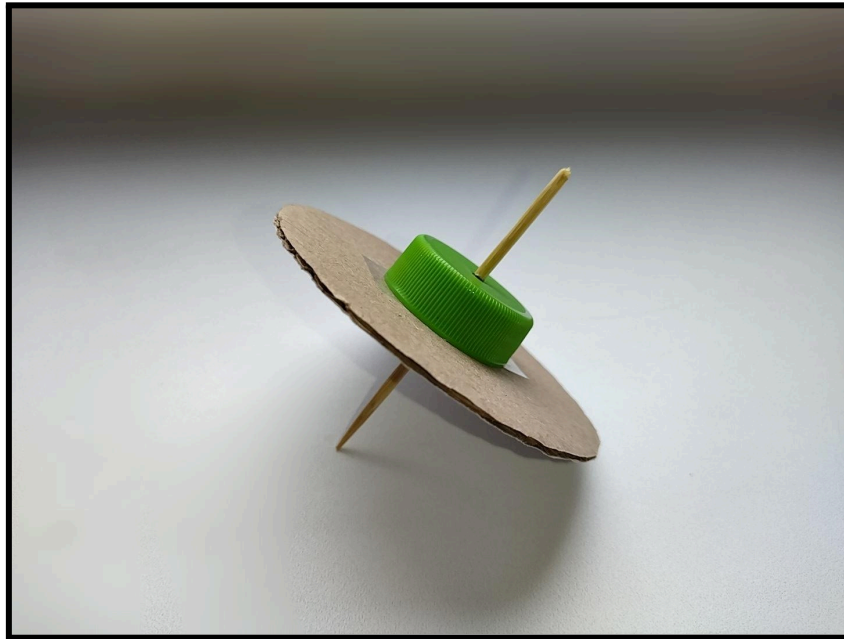


Image 10. Congratulations! Your spinning top is ready.

15. You can try other sizes of cardboard (thickness or disc radius) and bottle caps, lengths of the skewer and positions of bottle cap and disc. Keep in mind: you can cut the skewer shorter or make the radius of the cardboard disc smaller. But you can't reverse it!