



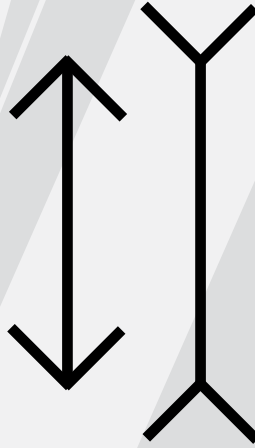
What You Need

- 4 pipe cleaners of the same size and color
- scissors
- a friend

ARROWS



Which middle line looks longer?



- 1 **Cut** two pipe cleaners in half. These will be the ends of your arrows.
- 2 **Wrap** the middle of one of the short pipe cleaners around the end of one of the long pipe cleaners. Then **bend** the short end in half so it looks like an arrow.
- 3 **Repeat** with the other short pipe cleaner so you have a two-headed arrow.
- 4 Now **make** another two-headed arrow with the other pipe cleaners. This time **bend** the arrows in the other direction, so they are pointing in rather than out.
- 5 Now you've made two pipe cleaners of the **same length** look **different**. See if a friend can tell. **Put** both pipe cleaner arrows about a foot apart on a table. **Ask** your friend which **middle** pipe cleaner is longer.



Now it's time to **experiment**. Can you make two pipe cleaners that are **different sizes** look the **same**? **Test it** and **send** your results to ZOOM at pbskids.org/zoom

Sent in by Kelsey R. of Troy, NY



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pbskids.org/zoom

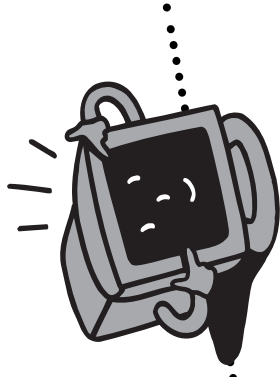
ARROWS

Draw a picture of the arrows you made.



Science Scoop

Your eyes bring in information about the outside world and help your brain make sense of what you see. Sometimes you see things as you **expect** them to be, rather than as they are. In this activity, the pipe cleaners **look** like they are different sizes even though they're really the same length. This kind of surprise is called an "**optical illusion**."



Visit the ZOOM Web Site!

- Keep experimenting with vision by trying **Phenakistiscope** and **Peripheral Vision** at **pbskids.org/zoom**
- Do you know any optical illusions? Send them to ZOOM at **pbskids.org/zoom**