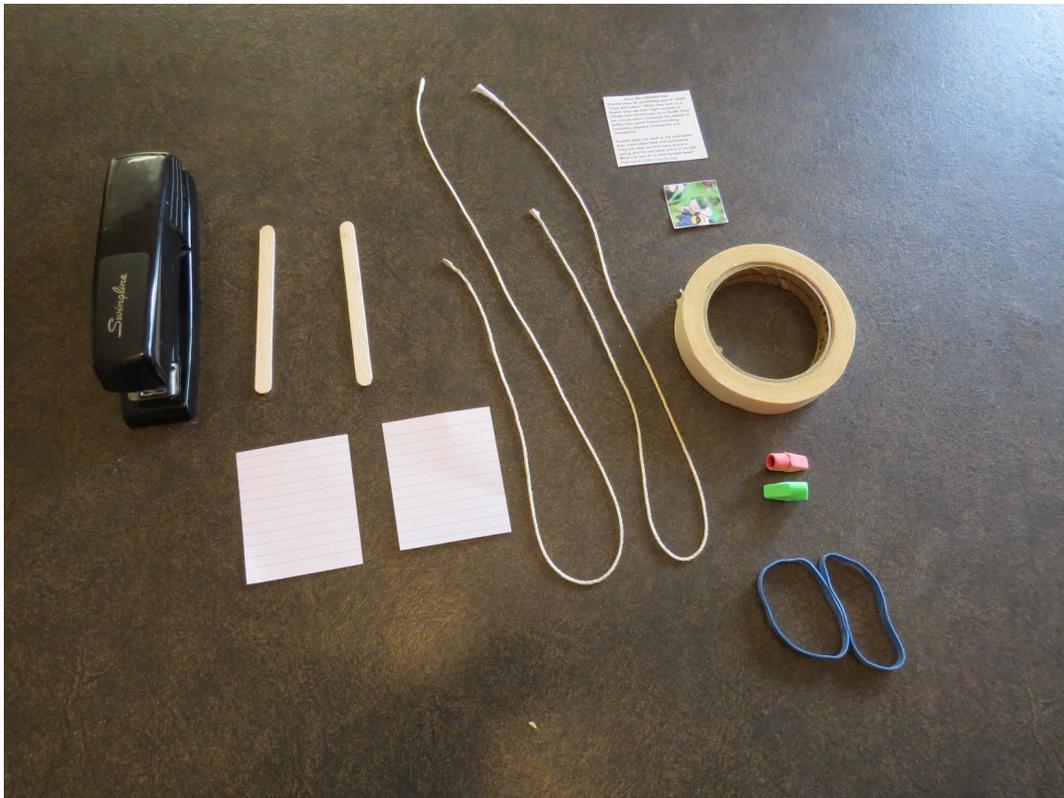


Activity: Buzz like a bumble bee! *Without using your mouth!!*

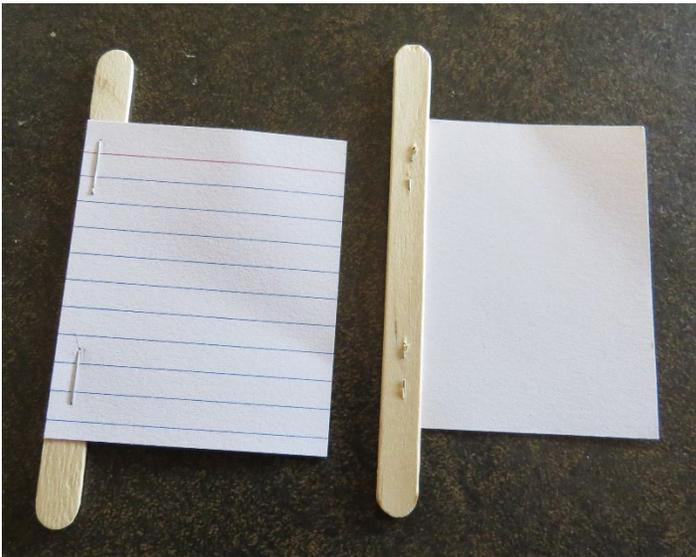
Why would you want to buzz like a bumble bee? Bumble bees do something special called “buzz pollination.” They use their flight muscles to shake their entire body which increases the release of pollen from some flowers including tomatoes, peppers, blueberries and cranberries. Bumble bees help flowers release their pollen by vibrating up to 24,000 times per minute. This is about the same number of vibrations as the musical note, middle C.

Material list:

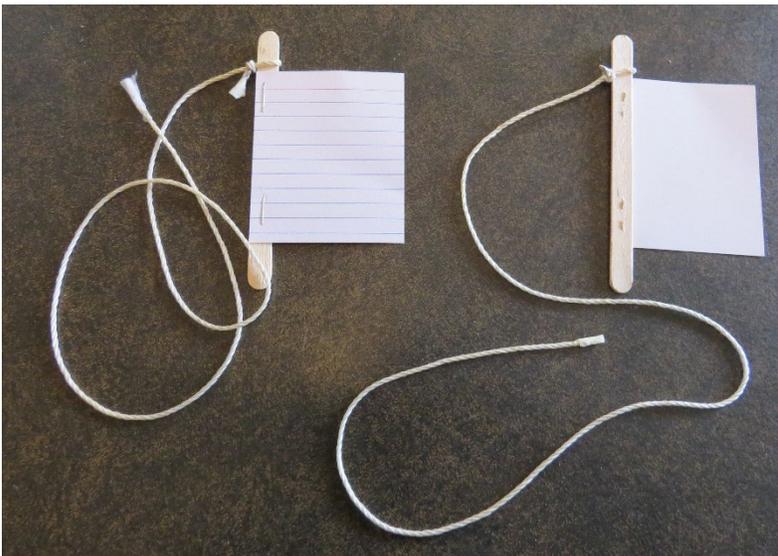
- Popsicle stick
- ½ of a 3x5 index card
- Stapler
- 2 feet of string
- Two pencil erasers or masking tape
- A wide rubber band – about 1/4" wide
- Bumble bee information sticker – See below
- Bumble bee picture sticker – See below



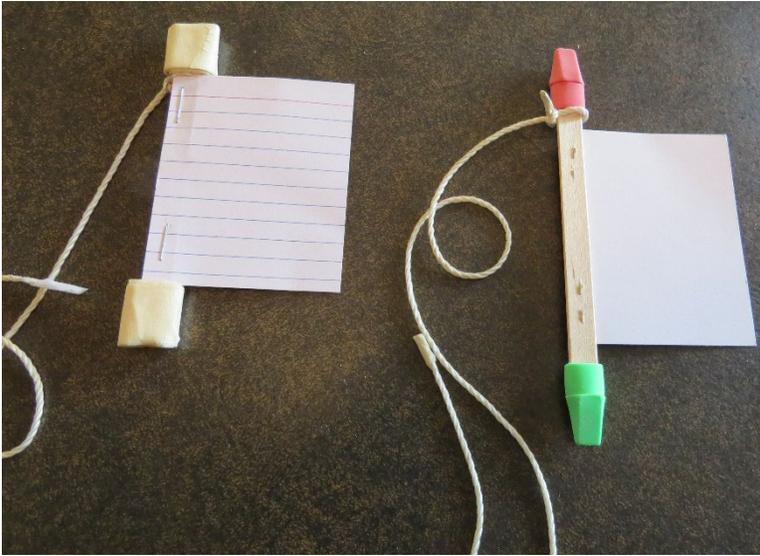
Step 1 – staple the index card to the popsicle stick (for safety have something to press down the staples on the other side if needed)



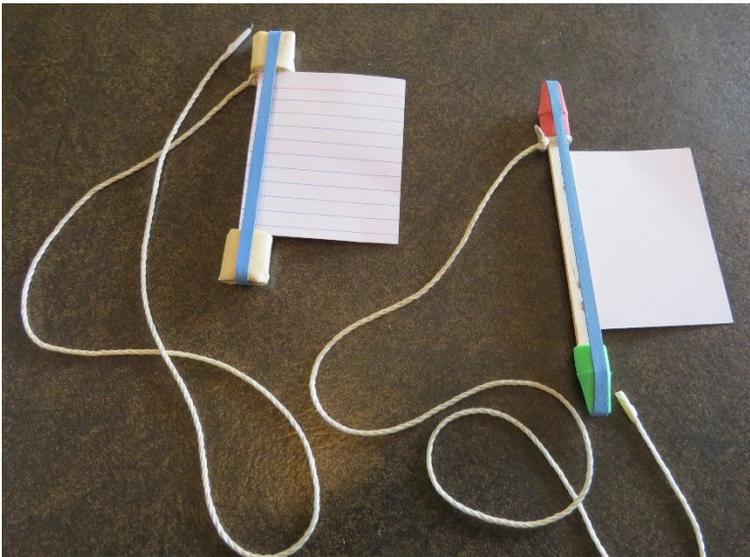
Step 2 – tie one end of the string to the popsicle stick near the index card



Step 3 – place a pencil eraser on each end of the popsicle stick OR wrap masking tape around each end of the popsicle stick until it sticks out about a quarter inch thick on all sides. The masking tape takes longer and uses about 3 ft. of tape on each end of the popsicle stick.

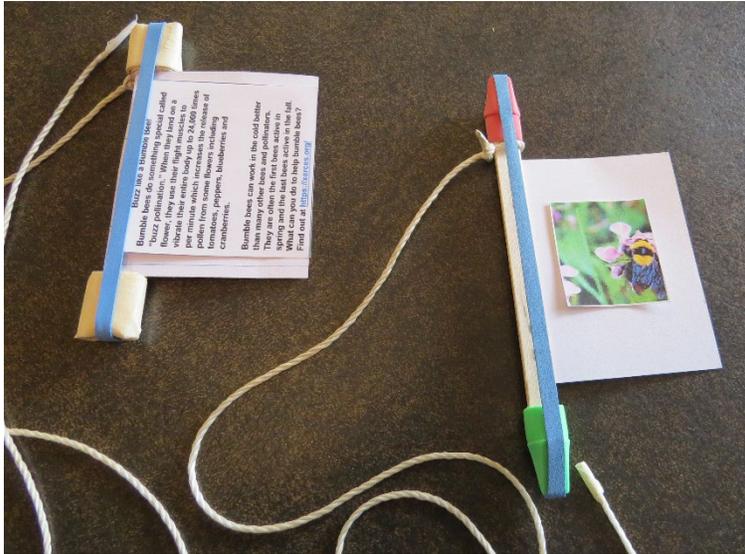


Step 4 – place the rubber band on the popsicle stick from end to end



Step 5 – take the end of the string and stand away from other people and objects and swing the popsicle stick in a vertical circle very fast.

Step 6 – put the bumble bee information sticker on one side of the index card and the bumblebee picture sticker on the other side!



Now you're buzzing like a bumble bee! Show off your buzz!

Bumble Bee Information Sticker (cut out on dotted line):

Buzz like a Bumble Bee!
Bumble bees do something special called "buzz pollination." When they land on a flower, they use their flight muscles to vibrate their entire body up to 24,000 times per minute which increases the release of pollen from some flowers including tomatoes, peppers, blueberries and cranberries.

Bumble bees can work in the cold better than many other bees and pollinators. They are often the first bees active in spring and the last bees active in the fall.

What can you do to help bumble bees? Find out at xerces.org.



Activity: The physics of pollination – Can you make pollen ‘move’ like a bee?

Have you ever walked across a carpet and gotten shocked when you touched something? That happens with bees and flowers too!

When a bee flies around the movement of its wings builds up a positive charge (just like you walking across a carpet). Flowers usually has a slight negative charge in the air around them and research shows bees can detect the difference in the charge. When the bee lands on the flower pollen the negatively charged pollen of the flower is attracted to the bee and the positively charged pollen that the bee is carrying is attracted to the flower. Pollination!

Material list:

- An empty CD/DVD container
- Finely cut pieces of paper - or the dots from a hole punch
- A plastic snack or sandwich bag
- A piece of wool
- A description of the activity (see below)
 - A colored piece of paper, like a flower color, cut the same size as the description of the activity (optional)



Step 1 – prepare the CD/DVD container

- a) Put the description of the activity on the bottom of the container facing out so it can be read. Make sure the lid fits tightly and won't flop around.



- i. Put the colored piece of paper in the bottom of the container on top of the description of the activity.



- b) Put the very small pieces of paper (preferably yellow to represent pollen) in the container.
- c) Close the container



Step 2 – put the plastic bag on your hand and rub it briskly over the piece of wool for 5-10 seconds to charge it like a bee gets charged when it is flying.



Step 3 – Rub the plastic bag across the top of the CD/DVD disc and watch the paper (pollen) move toward the bag (bee)!



What can you do to help bumble bees? Find out at <https://xerces.org/>

Supplemental information:

<https://thetartan.org/2013/4/1/scitech/howthingswork>

LiveScience describes a new theory regarding how bees detect flowers: Most plants have a slight negative charge relative to the air around them, while flying bees have a positive charge. To test whether these opposite charges help bees locate flowers, researchers used artificial flowers, half of which were electrically charged and filled with sweet nectar, the other half of which had no charge and were filled with a bitter solution. As expected, the bees quickly learned that the good food could be found in the electrically charged sweet flowers.

But the real test came when the researchers switched off the electrical charges. When none of the flowers was electrically charged, the bees simply visited the flowers randomly. The results of this experiment suggest that bees do indeed use the electric charge of plants to find nectar-rich flowers. What's more, biologists discovered that flowers that have already had their nectar harvested become more positively charged. This way, bees know not to waste their time visiting flowers that no longer have much nectar.

Description of activity to go in CD/DVD container:

Can you make pollen 'move' like a bee?

Did you ever walk across a carpet and get shocked when you touched something? That happens with bees and flowers too! When a bee flies around the movement of their wings builds up a positive charge (just like you walking across a carpet). Flowers usually have a slight negative charge in the air around them and research shows bees can detect the charge. When a bee lands on the flower the negatively charged pollen of the flower is attracted to the bee and the positively charged pollen that the bee is carrying is attracted to the flower. Pollination!

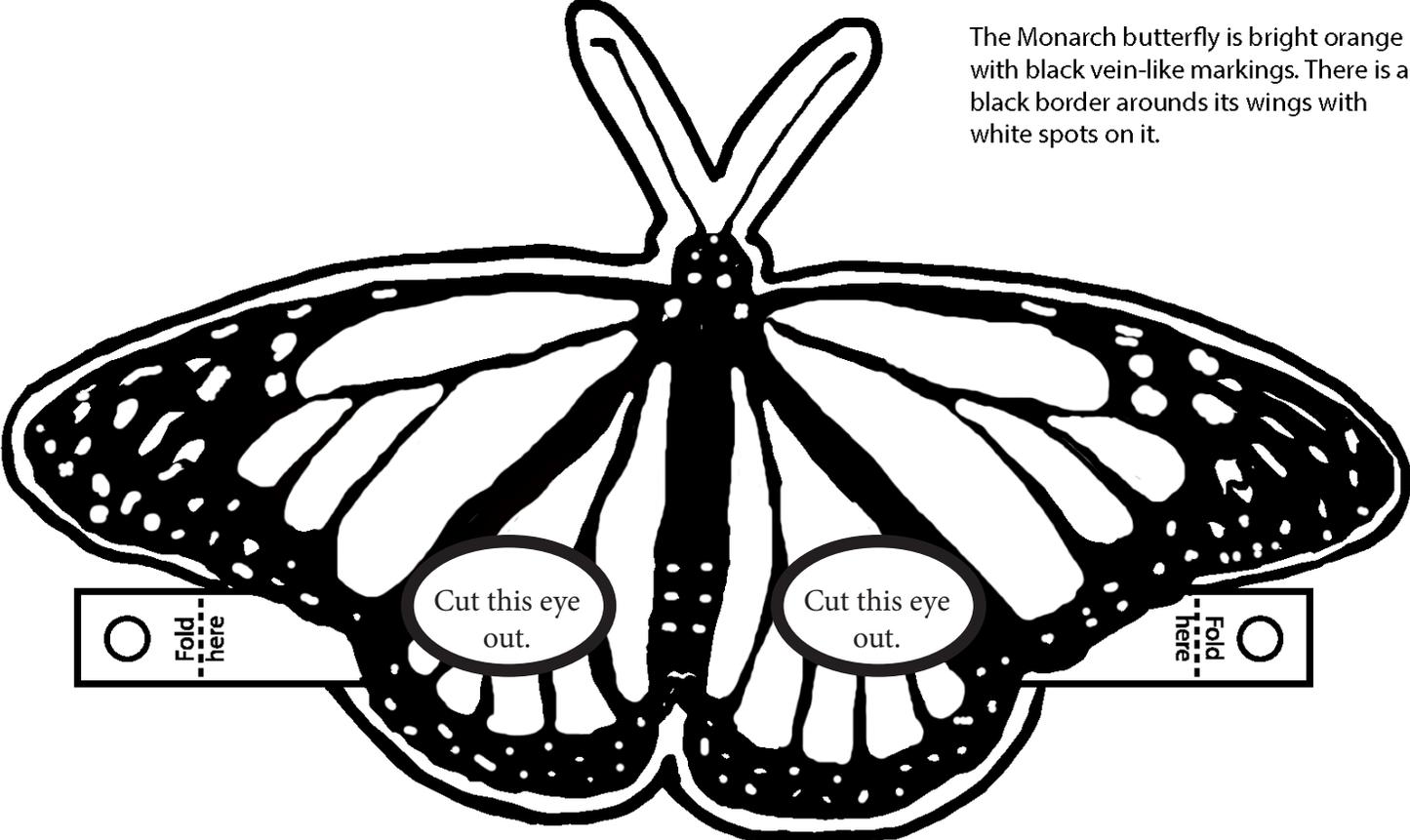
Now you do it!

Step 1 – put the plastic bag on your hand and rub it briskly over the piece of wool for 5-10 seconds to charge it like a bee gets charged when it is flying.

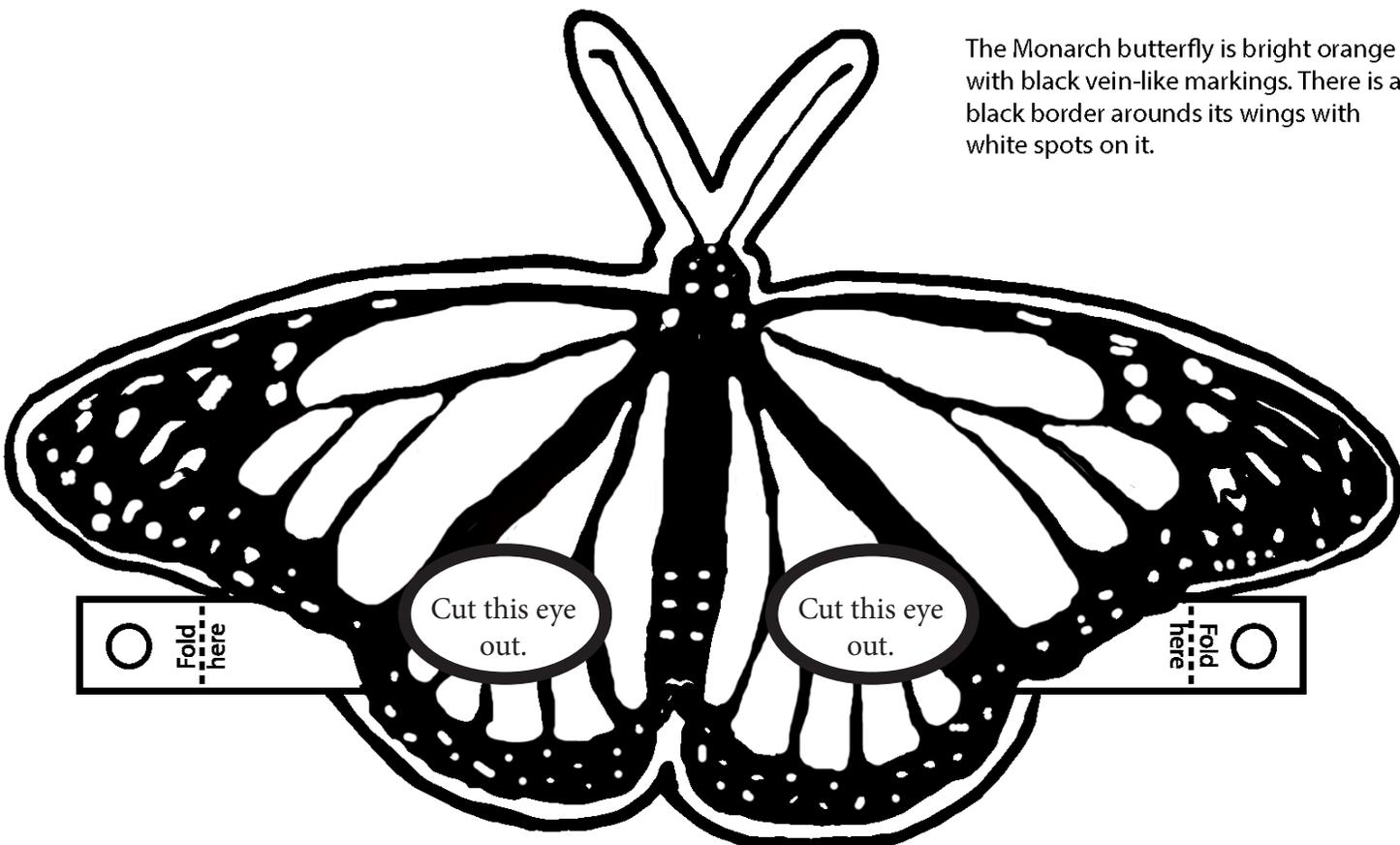
Step 2 – Rub the plastic bag across the top of the CD/DVD disc and watch the paper (pollen) move toward the bag (bee)!

How can you help bumble bees? Find out at <https://xerces.org/>

The Monarch butterfly is bright orange with black vein-like markings. There is a black border around its wings with white spots on it.



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Help pollinators!

Grown pollinator-friendly flowers

Protect nest sites & host plants

Avoid using pesticides

Spread the word!



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