



Butterfly-Making for Young Entomologists

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This activity for young children teaches them about the three major body parts of the insect and how insects see, taste, detect odors, and move using their legs and wings. The model uses a butterfly, but other insects can be made with a little modification. Lessons could include the life cycle of butterflies or other insects and how insects relate to our environment.

Materials and tools

Most of the materials needed to make a butterfly are recycled.

Materials

cardboard cylinder from toilet paper roll
recycled office paper (4 sheets)
colored paper
telephone wire or twist-ties
egg carton
elastic thread or rubber band
foam food tray
security envelope
box board

butterfly wing drawing (see p. 7)
color crayons or pencils
transparent tape
large nail

Tools

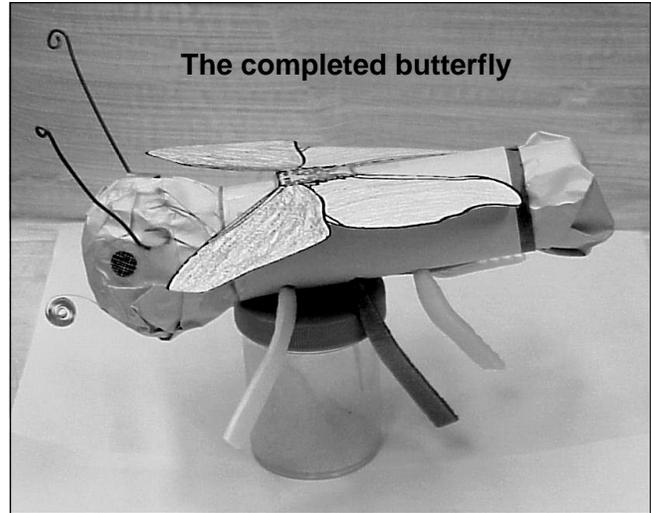
drill
¼ inch drill bit
wire cutter
utility knife
scissors

An adult will have to prepare the insect body parts and put together the head, thorax, and abdomen for a young child. The child can attach the eyes, antennae, wings, legs, and mouth.

The head

The head will be a paper ball made out of three sheets of recycled 8½ x 11 inch office paper and covered with colored paper. It should look like a Christmas tree ornament, with a wire eyelet. See Figure 1 for the body parts.

1. To make the wire eyelet, cut a 4–5-inch length of telephone wire, or use twist-ties. Bend the wire in half and twist it several times near the bend to make an



eyelet. Bend the two single ends back toward the eye to form a W. It should look like a ship's anchor. This anchor will be used to hold the head to the body with a rubber band.

2. Make a small slit in the middle of a sheet of recycled office paper just large enough to fit the wire eyelet through. Crumple a paper ball around the anchor to form the head. Repeat with two more sheets to make the ball about 2½ inches in diameter. Make sure the wire eyelet is protruding out of the back of the head.
3. Cut a rubber band to a length of about 5 inches. The rubber bands you get with the home-delivery newspaper works. Tie one end of the rubber band to the wire eyelet in the head.
4. Cut a sheet of 8½ x 14 inch colored paper in half to get two pieces each 8½ x 7 inches. Wrap one piece around the paper head and shape it so the ends of the paper meet around the wire eyelet.

The thorax

The toilet paper cylinder will be the thorax, and three pairs of holes in the cylinder will hold the insect legs.

The head and abdomen will be inserted into the open ends of the thorax. You may drill all the leg holes or use a single-hole punch for the outer holes near the open ends of the cylinder and the drill for the middle holes.

1. Make three pairs of holes along the length of the cylinder. Each pair of holes should be about $\frac{3}{4}$ –1 inch apart. The three pairs of holes can be spaced evenly along the entire length of the cylinder or spaced closer over $\frac{3}{4}$ of the cylinder, creating a longer abdomen. Leave enough room at the open ends so the paper head and the egg carton abdomen do not block the leg holes. A single-hole punch makes neater holes but can only reach $\frac{3}{4}$ inch from the open end of the cylinder. Beyond the reach of the hole puncher, you will need to drill the holes.
2. Cut an $8\frac{1}{2}$ x 11-inch sheet of color paper into quarters $4\frac{1}{4}$ x $5\frac{1}{2}$ inches. Wrap one piece of paper around the cylinder so the ends meet between the two lengths of leg holes, and tape the paper together. Most toilet paper cylinders are $4\frac{1}{2}$ inches long, so there will be a little of the cardboard exposed at the open ends, but this is the most economical use of paper.
3. Use a pencil to punch holes through the paper where you made holes in the cylinder.

The abdomen

The abdomen will be made from a recycled egg carton stuffed with recycled office paper and covered with color paper. The tips of the egg carton cup will be inserted into one end of the toilet paper cylinder.

1. Cut out one egg-holding cup out of an egg carton. Cut slits in the wide side of the carton cup so it will be easier to fit into the thorax. With a nail, poke two holes through the bottom of the cup about $\frac{3}{8}$ inch apart. You will insert the rubber band from the head through these holes.
2. Cut a piece of color paper about $4\frac{1}{4}$ x $4\frac{5}{8}$ inch. Take one legal-size paper $8\frac{1}{2}$ x 14 inches, cut the paper in half lengthwise into $4\frac{1}{4}$ inch strips, then cut the strips into three sections just about $4\frac{5}{8}$ inch each. One piece of $4\frac{1}{4}$ x $4\frac{5}{8}$ inch paper will cover the egg carton cup.
3. Cut recycled office paper into thirds, about $3\frac{5}{8}$ x $8\frac{1}{2}$ inches. Use one piece to stuff into the egg carton cup. *You may also use a paper ball with the wire eyelet like the head and shape it into an abdomen instead of using the egg carton cup.

Assemble the body

The head, thorax and abdomen body section will have to be assembled for young children. The rubber band tied to the wire eyelet in the head is to hold the head and egg carton abdomen to the thorax. See Figure 1 for the assembled body.

1. Place the wire eyelet and rubber band end of the paper ball head into the toilet paper cylinder. If the leg holes are evenly spaced, attach the head to either end of the cylinder. If the leg holes are made closer to one end of the cylinder, make sure that end of the cylinder is attached to the head. Pull the rubber band through the inside of the cylinder and out the other end.
2. Position the egg carton cup so the bottom of the cup is farthest from the head. Insert the rubber band through one hole of the egg carton cup. It may be easier to hold the head between your knees and pull the rubber band. Insert the rubber band back through the second hole in the cup so the rubber band is going back toward the head. Pull the rubber band and tie it to itself.
3. Crumple a piece of $3\frac{5}{8}$ x $8\frac{1}{2}$ inch paper around the rubber band and stuff it into the egg carton cup to keep it from collapsing. Cover the outside of the cup with the cut color paper, tuck the ends of the paper and the tips of the egg carton into the toilet paper cylinder.
4. If you use the paper ball with wire eyelet for the abdomen, loop the rubber band through the eyelet and tie it.
5. Tape the head to the thorax to further secure it. You may be able to assemble the head and body without the rubber band but the head will probably fall off if you secure it to the thorax just with tape.

The attachments

The antennae, eyes, mouth, and legs can be prepared for the children. Once the head, thorax, and abdomen is put together, most young children can assemble the rest of the butterfly themselves with a little help if needed. Older children may be able to make the different parts themselves. Figure 2 is an example of the assembled butterfly.

The antennae

Insects use their antennae to smell.

1. Use a pair of twist-ties or telephone wire for the antennae. Curl one end of the twist tie into a knob. Bend the other end about $\frac{1}{4}$ inch perpendicular to the stem, to form a base to tape to the head. If you use telephone wire, curl one end into a knob, the other end into a circular or rectangular base perpendicular to

the wire stem.

2. Tape the base of the antennae to the top of the head.
Without the base, the antennae will flop over when you tape it to the head.

The eyes

The pattern on the inside of the security envelope will be the facets of the insect compound eye. Cut out a pair of eyes from a security envelope with scissors or punch them out with a large hole puncher ($\frac{1}{16}$ inch hole). Tape the eyes to the side of the head.

The mouth

The butterfly has a long tongue-like mouth called a proboscis to feed on flower nectar. Cut $8\frac{1}{2}$ x 11-inch colored paper into narrow strips about $\frac{3}{16}$ x $8\frac{1}{2}$ inches. Roll the paper strip into a coil like a paper party whistle. Tape the mouth to the lower front of the head.

The legs

Adult insects have three pairs of legs. Cut six strips out of the foam food tray about 3 inches long and $\frac{3}{8}$ inch wide. Trim one end of each strip to a taper to fit into the holes of the toilet paper cylinder. Insert the legs.

The wings

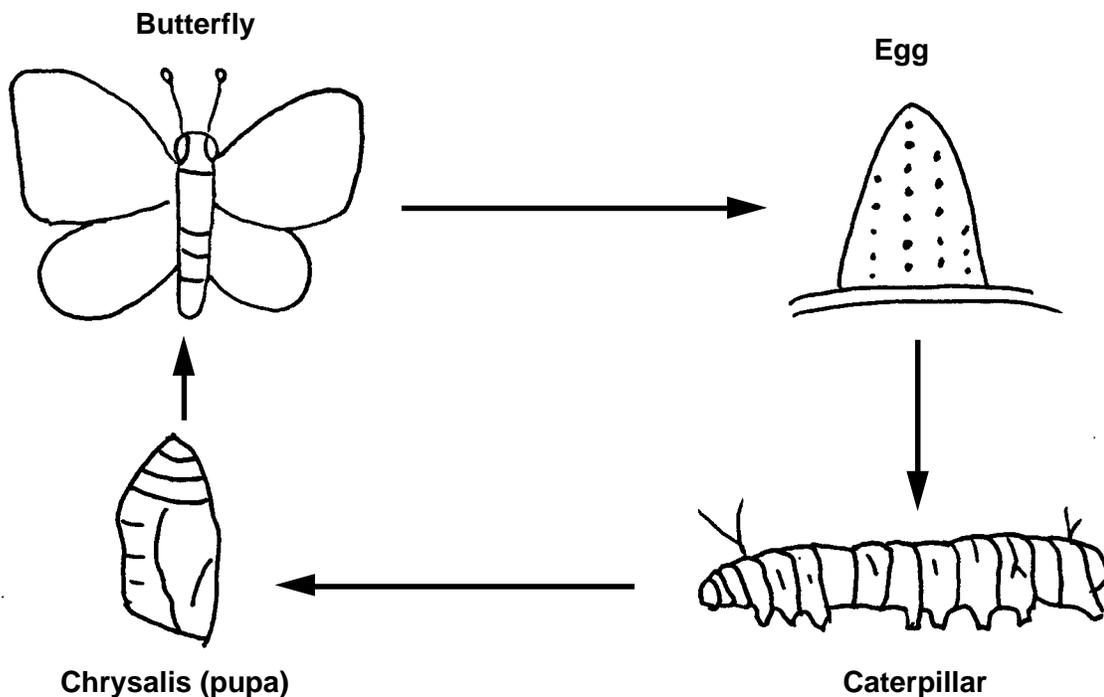
The wings should have about a 5 inch span. Have the children color the drawing of the wing and cut it out or cut a wing out of construction paper.

Cut strips out of box board like cereal boxes about $\frac{1}{2}$ inch wide and 4 inches long or just short of the wing span. After the wings have been cut out and colored, tape the strip of box board to the underside of the wing. This will keep the paper wing from collapsing, and the wing strip can be bent upward to make the wing appear to be in flight. Tape the wing to the top side of the toilet paper cylinder opposite the legs.

Explain the major parts of the insect and the insect life cycle

Show the diagram of the butterfly life cycle from egg to caterpillar to chrysalis (pupa) to adult. This will teach the children about the stages of the butterfly metamorphosis. They can make up their own type of butterfly. They could be determined by which plants the caterpillar stage of their butterfly eats, which flowers the butterfly feeds on, and how the butterfly relates to the environment. Other insects could also be made by changing the wings and mouthparts.

Life cycle of a butterfly



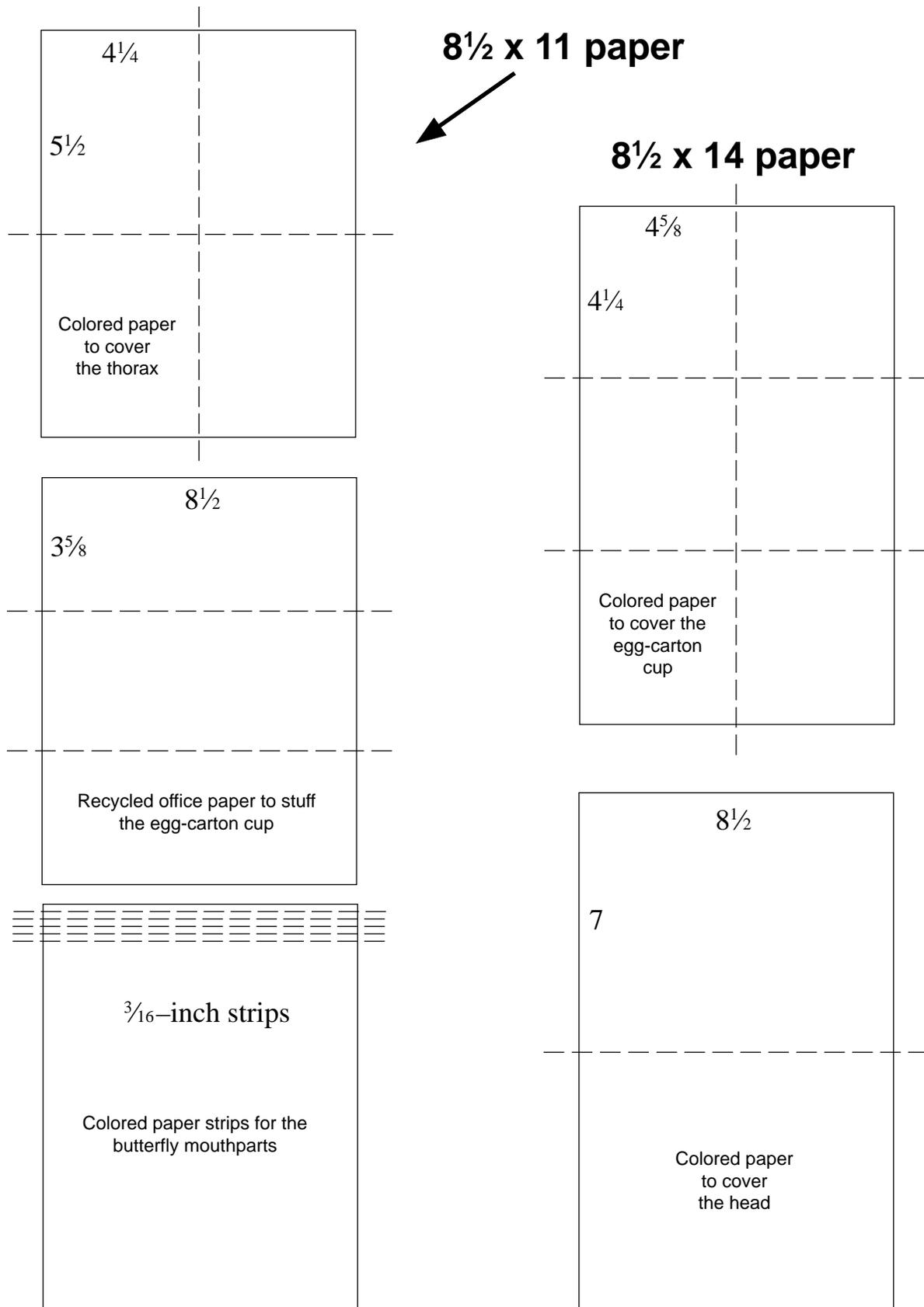
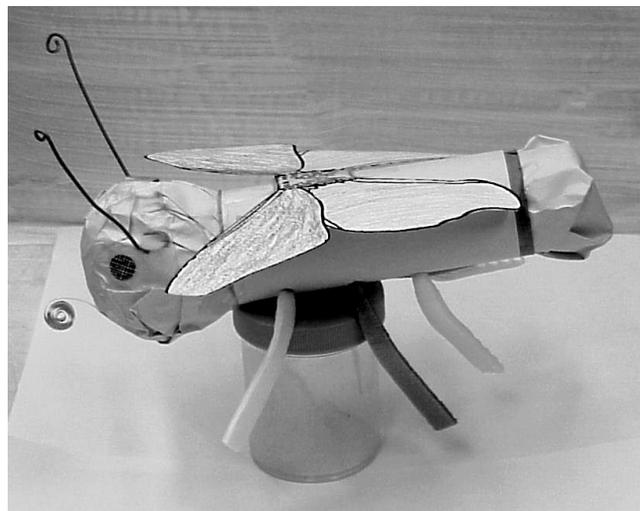
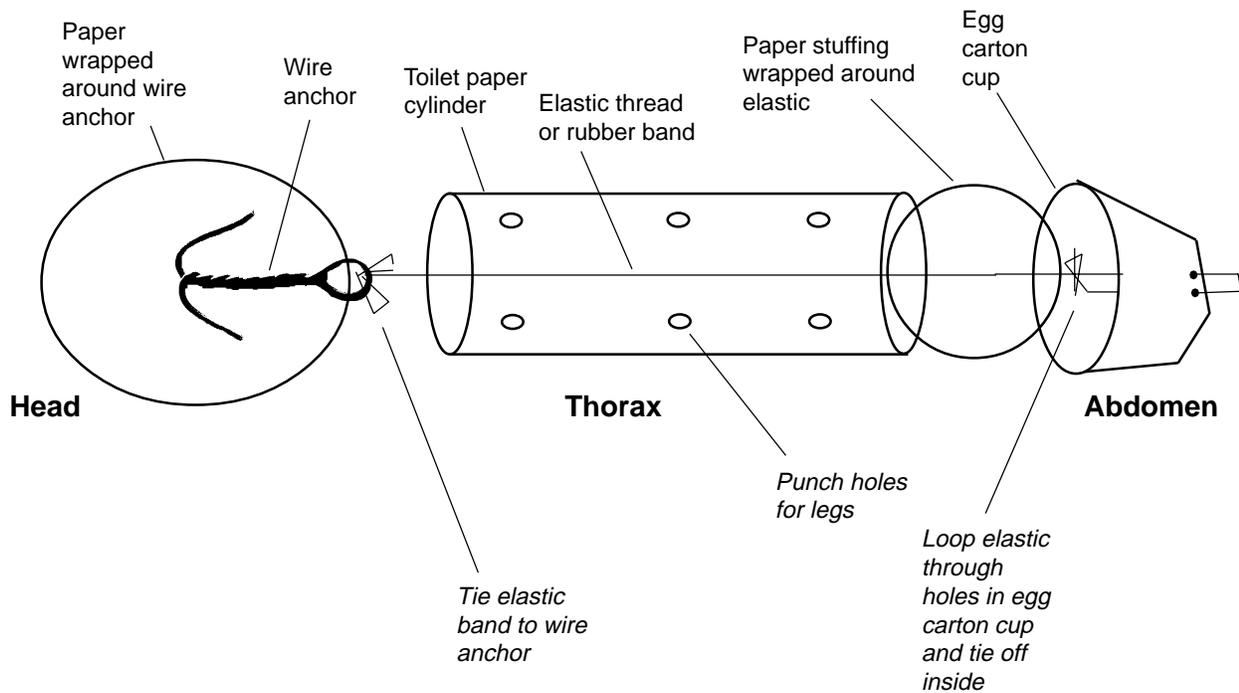


Diagram of butterfly construction



**Cut out and color the
butterfly wings**

