

Celebrating Cicadas

Cicadas are amazing insects. They lay their eggs in tree branches and after they hatch, the nymphs fall to the ground and burrow, living on sap in the tree roots. The length of time the juvenile insects remain underground depends on the species. When they are ready to metamorphose into adults, they emerge from the ground and shed their exoskeleton one last time.

While annual cicadas spend a variety of years underground as nymphs, there are always some adults that emerge every year. *Magicicada* cicadas, found only in North America, are famous for their unique periodical mass emergences at 13 or 17 years, depending on the species. Brood X, a type of 17-year cicada, last emerged in 2021 and won't emerge again until, you guessed it, 2038. In 2024, Broods XIII (a 17-year species) and XIX (a 13-year species) will both be emerging. Whereas annual cicadas are usually a pale green, *Magicicada* adults are easy to identify as they have bright red eyes and black bodies.

Male cicadas are famous for their sounds. They vibrate special organs in their abdomen to attract a mate. To celebrate the recognizable summer symphony produced by the annual or periodical cicada emergence, here are a few activities to try. These were inspired by the book *Cicada Olympics* by Cindy Smith and Richard Groover with illustrations by Brandon McPherson.

Annual Cicada



Emerging each year

Magicicada Cicada



Emerging in 2024

Broods XIII (a 17-year species)
Broods XIX (a 13-year species)

Cicada Communication

What You'll Need

- Noisemaking devices, such as a clicker, kazoo and [homemade harmonica](#)
- Timekeeper

What You'll Do

1. Head outside and find a group of cicadas on a tree where at least a few of them are noisemaking males.
2. Observe them for a few minutes before you “sing” to them.
3. If you have a clicker, click rapidly 10 times in a row. Watch the cicadas. Do they seem to notice? Do they move toward your sounds?
4. If you have a kazoo or homemade harmonica, try changing the pitch of your instrument. Do they react?
5. Don't try all the devices at the same time! Try each noise at least three times, and give the cicadas at least one minute of quiet before trying a different noisemaker.
6. Record the data from your experiment in the chart.
7. Next, try using your body parts to create sounds. Use your fingers and snap rapidly 10 times in a row. Does this produce a reaction?
8. Put your lips together like duck lips, fill your cheeks with air and make the deepest sound you can while blowing out of your vibrating lips. Did the cicadas show any interest in this noise?
9. Record your results.
10. Did the cicadas react differently to the noisemaking devices than they did the sounds you made with your body? Can you come to any conclusion on what types of noises cicadas are most likely to respond to? What supports your observations?

Noise Maker	Cicada Response #1	Cicada Response #2	Cicada Response #3
Example: Snapping fingers	<i>Cicadas stopped making noise for 10 seconds</i>	<i>One cicada clicked a few times</i>	<i>They all clicked back after snapping fingers</i>

Exciting Exoskeletons

What You'll Need

- Magnifying glass
- A jar or container to gather your specimens

What You'll Do

Nymphs are juvenile forms of insects that have not completed metamorphosis. Other insects with incomplete metamorphosis include crickets, grasshoppers and cockroaches.

In the spring, look for the cicada nymph exoskeletons around the base of trees. The exoskeletons are delicate so be gentle as you observe them.

1. Find the crack that runs down the back of the nymph exoskeleton. This is where the adult cicada emerged.
2. Can you identify all three parts of the insect body: the head, thorax and abdomen?
3. Can you find all six insect legs?
4. Can you find any small, thin, white strings inside the exoskeleton? These were the breathing tubes that connected to the sides of the nymph's body.
5. Which pair of legs has the thickest leg segments? Cicada nymphs dig themselves out of the soil so their front legs have strong digging muscles.
6. Find the wing pads on the back of the thorax (they look like mini wings). Only adult cicadas have fully formed wings. Why would a nymph not have functioning wings? (Hint: where do they live?)

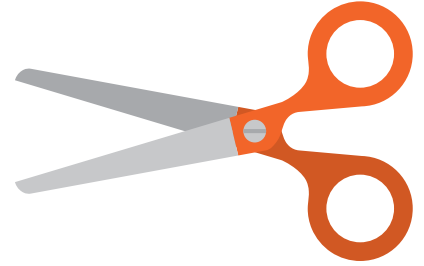
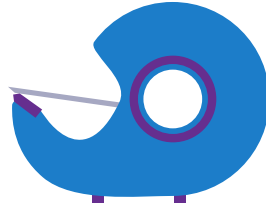
What else do you observe? If you can, find an adult cicada and compare it to the nymph. Can you spot some differences?



Bug Building

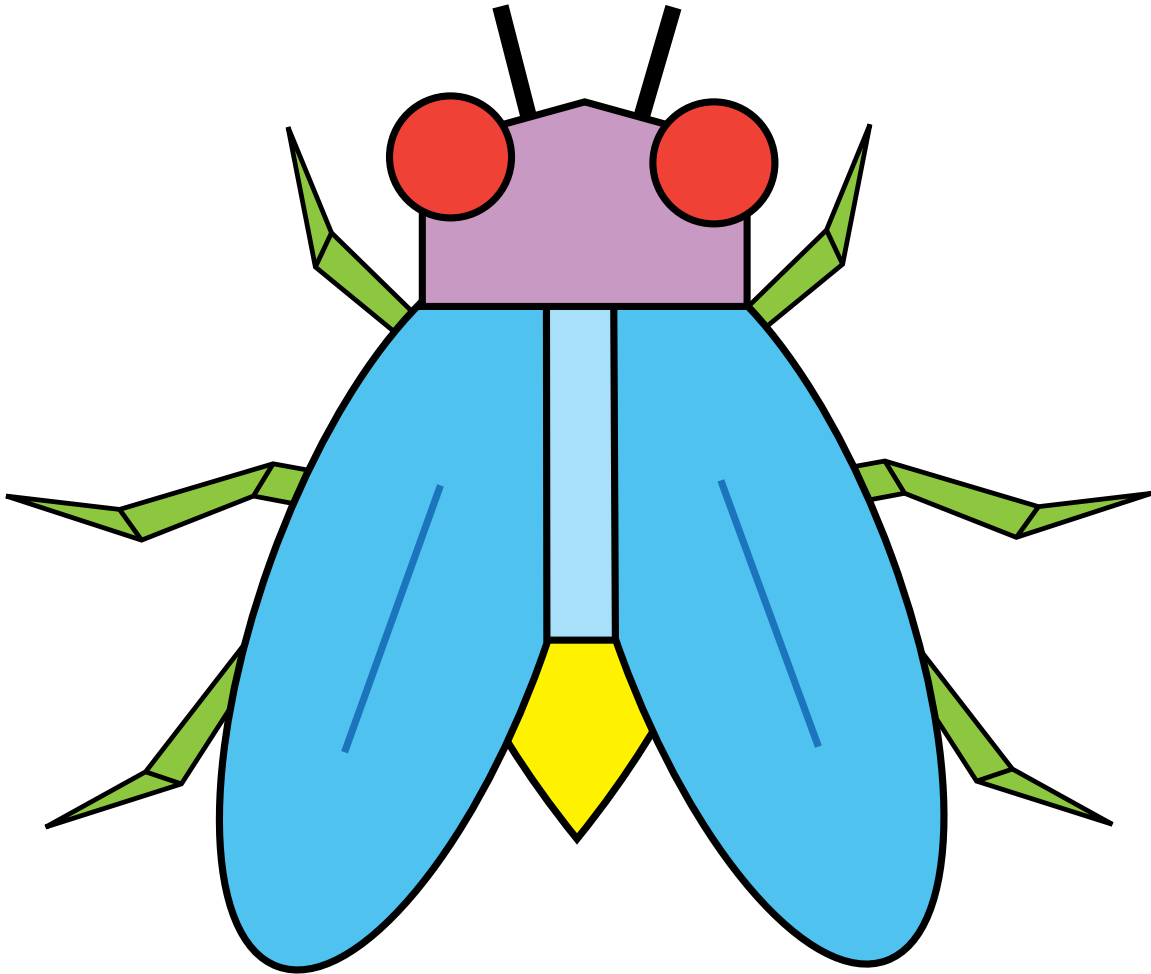
What You'll Need

- Printed template on next page
- Glue stick or tape
- Scissors



What You'll Do

- Cut out each shape on the next page.
- Bend the legs at the joints so they hold up the body.
- Fold the wings at the lines so they bend over the body.
- Glue the pieces together as shown to create a 3D model of an adult *Magicicada* complete with red eyes and wings!



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Cicada Template

