HUDSON
RIVER
MUSEUM

The Best Nest
Science & Nature Project

Ages 8+ (Grade 2 and up)

Materials and tools needed:
- Paper (printer paper or card stock)
- Paper towel tube(s)
- Toilet paper tubes
- Cereal box
- Cotton balls or fabric scraps
- White glue and/or tape
- Scissors

Optional materials and tools:
- Cutouts of bird and squirrel (see last page)
- Papier-mâché
- Paper straws
- Paint
- Hay (ask your pet rabbit), twigs, or grasses—but beware of critters!
- Hobby knife
- Pencils, markers, paintbrushes, or other small, thin cylinders (we will call these our "wrapping cores")

45+ minutes
But don't rush! It's hard work to build a good nest, whether you're a bird, a squirrel, or a human. You don't have to try to do it all at once. The more time you work at it, the more you'll learn!

Essential Questions:
- What materials do animals like birds or squirrels use to build their homes? Do humans use some of these same materials? We might use nails, screws, bolts, cement, plaster, or bricks in our houses; do other animals use anything similar?
- Have you ever watched an animal build a nest, or seen a video about nest-building? What sort of materials did the animal use? How long did it take for the animal to build its nest?
- What is the purpose of a home? Why do other animals need the nests they build?
- How easy or difficult would it be to build a structure if you had to use only the materials and techniques available to another animal?

Part 1: Overview

Spring is revving up across the Northern Hemisphere. In the New York area, flowers are blooming and trees are filling up with leaves. But before our forests are fully leafed-out, nests of various kinds may be visible in the trees—tucked into crooks of tree limbs or high up where tangles of small branches create a secure support.

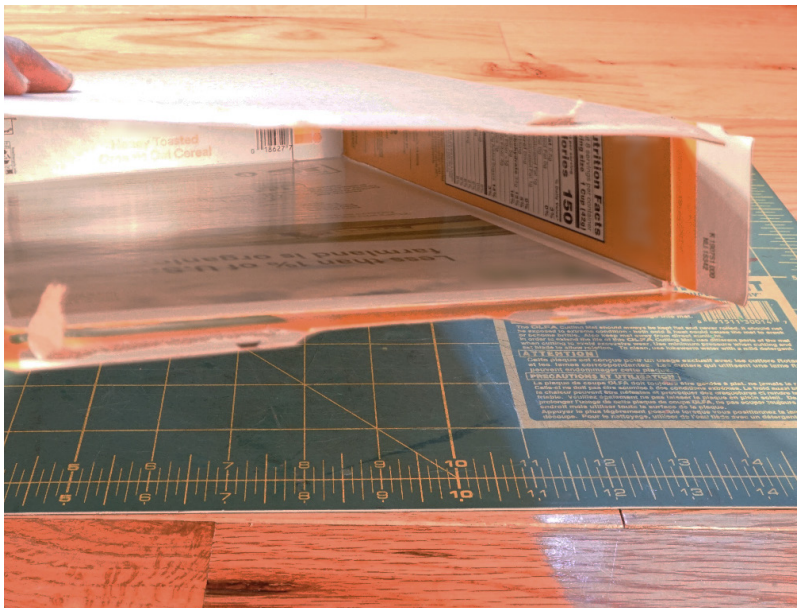
This workshop challenges you to make a model nest, like that of a bird or a squirrel, using items you probably have around the house. There are even a few critters we've prepared for you to add, or you can use your own.

Many bird nests (left) and squirrel nests (right) are made without any glue-like substance or fasteners holding them together. They are surprisingly complex and also surprisingly strong. They might look like bundles of straw, but if you try to make one yourself, you'll appreciate how much these other animals know about **engineering**!

Part 2: Activity

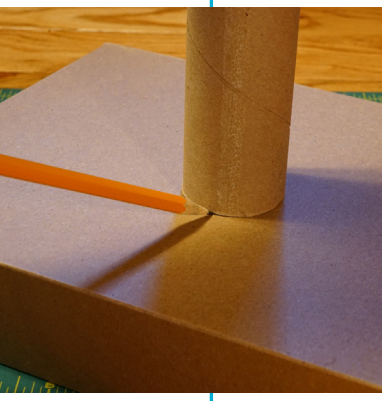
Step 1: Construct your support.

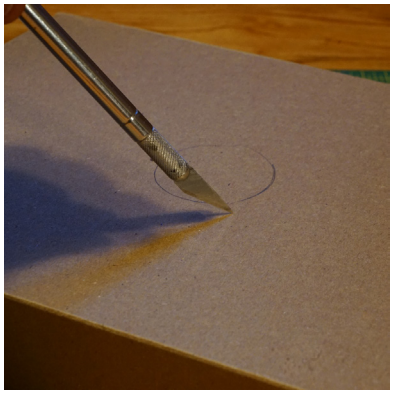
For your nest, try using a cereal box for the base because it makes a nice, stable foundation. To create a clean-looking cereal-box base that you can decorate yourself, carefully pull the glued-together sides apart and turn the box inside-out. Glue or tape it back together with the plain side facing out.

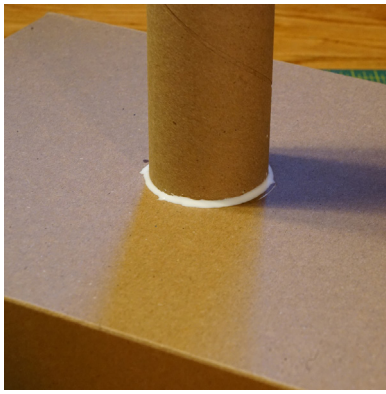


Step 2: Make your own tree trunk and plant your tree.

Place one end of a paper towel tube against the center of the box, and trace around it with a pen or pencil. Cut out the circle with scissors or a utility knife (with parental supervision). Put glue on the base of the tube. “Plant” the tube in the hole, and glue around where the tube joins the box.





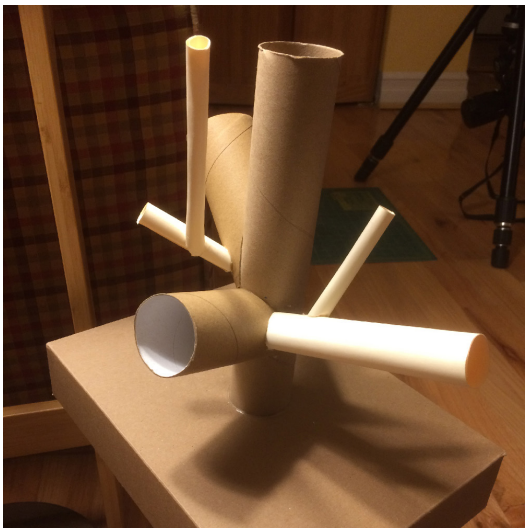


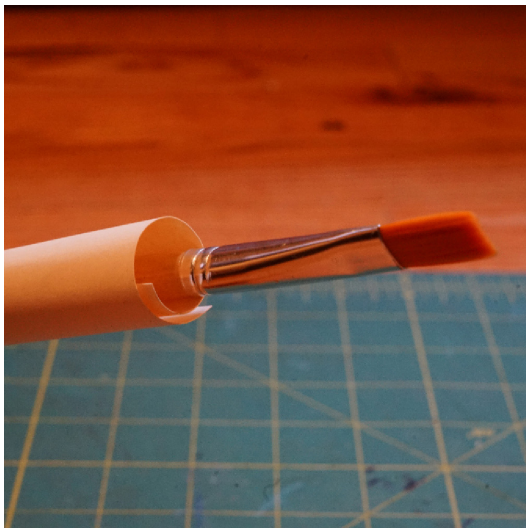
3: Add some limbs and branches.

You'll need to make enough supports to hold the nest up or together. Think like a squirrel or a bird: How big do you want your nest to be? What do you need to anchor it to? What will you need to keep it from falling off?

If you are using a large paper tube for the trunk, you can use smaller tubes or paper straws for branches and twigs. If you don't have paper straws, you can make them out of sheets of paper.

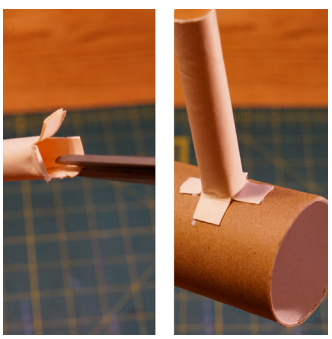
Use your "wrapping cores" from the materials and tools listed above. Wrap your paper around them, hold the paper in place, and then glue or tape together to make a cylinder. Now you have a "branch!"

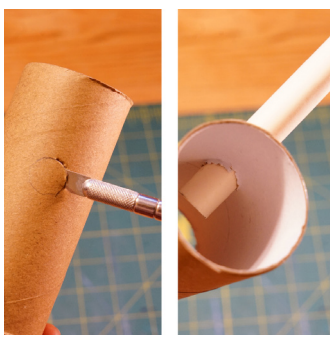


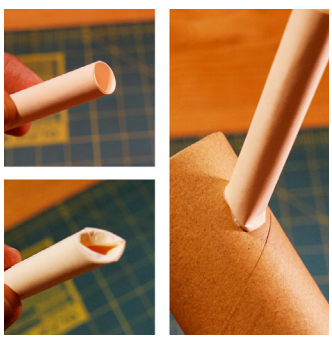


Here are three ways of attaching the branches:

Option 1 (left): Make cuts in the end of a paper tube, splay these tabs out, and tape or glue them in place. **Option 2 (center)**: Cut holes in the limbs and insert the branches, taping or gluing them in place. **Option 3 (right)**: Smush the end down at an angle and glue the branch in place.







4: Optional: Make it look even more like a tree.

Create tree bark using paint, markers, tape, or papier-mâché.

Remember, not all bark is brown. Have a can of white paint in the closet? Make the tree a paper birch!

5: Prepare your nest material.

Cut out a whole bunch of strips of paper, card stock, and cardboard. Cut or rip your paper into strips about 1/4" wide and at least 11" long. The strips should not be perfectly neat and even—this will make them less likely to slip apart. Make lots of them.

It can also help to crunch up and twist the paper strips. The idea is to give them more organic shapes, which you'd find in nature. Humans strive for geometric perfection in their structural materials. But messiness is your friend here. Messy things get tangled more easily!

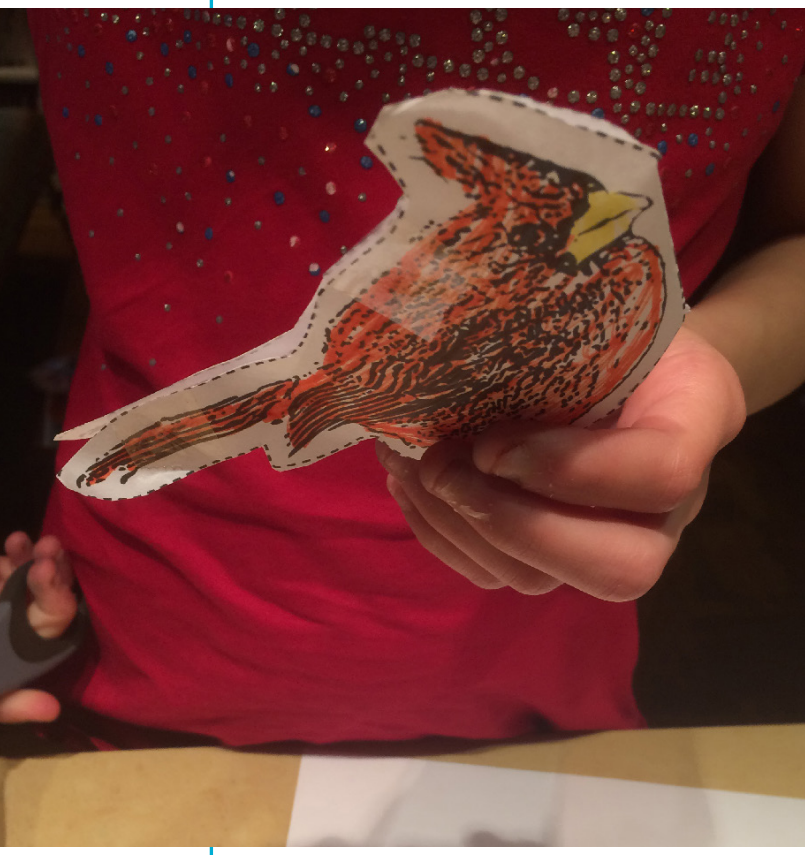
6: Add the animal who will call the nest home.

How do you know how large to make your nest? In case you don't have a small bird or squirrel in the house, we've included some that you can add. Print out and assemble them as shown (see last page). Now, as you make your nest—a ball for the squirrel, or a bowl for the bird—check them against these to make sure they fit.

The squirrel is a grey squirrel, common in our area, and their **dreys** are easy to spot.

The bird is a female cardinal. Why a cardinal? It's one of many birds whose nest is made simply by weaving grasses and sticks. Other birds use mud, saliva, or guano (yep, the scientific name for bird droppings).

We made both the squirrel and the cardinal smaller than actual size to make the nest-making a little easier. A full size squirrel, for example, would need a full-sized nest, which would be about the size of a basketball!



7: Weave! Weave like the wind!

This will take some practice and won't be easy! Nests are a tangle of sticks but constructed so that they stay tangled in just the right way and remain stable. As a human, without the weaving instinct of these animals, you may have to start with something humans are really good at, like tying knots or making braids. Try to make a structure supported by the branches you've made that holds together.

8: Finish up with some creature comforts.

Use cotton balls, fabric scraps, even hay (ask your pet rabbit first) to fill in the interior of the nest. These materials don't just make the nest softer, they also help protect the structure by distributing weight, and keeping bird toes and squirrel fingers out of the weave.

9: Share your work:

Take a photo of your tree and nest, and post them to Instagram using the hashtags #MuseumFromHome and #TheBestNest, and tag the Hudson River Museum.

Part 3: Glossary & Further Reading

Drey: A nest made by squirrels, with several layers of sticks and leaves forming a hollow ball.

Engineering: Assembling materials of various kinds into a form which solves a problem or performs a specific function.

Guano: Bird droppings. Often but not always white.

Organic: Materials and substances made directly by the bodies of living things. (For example, humans make Legos, but we don't grow them from our body like hair or fingernails.)

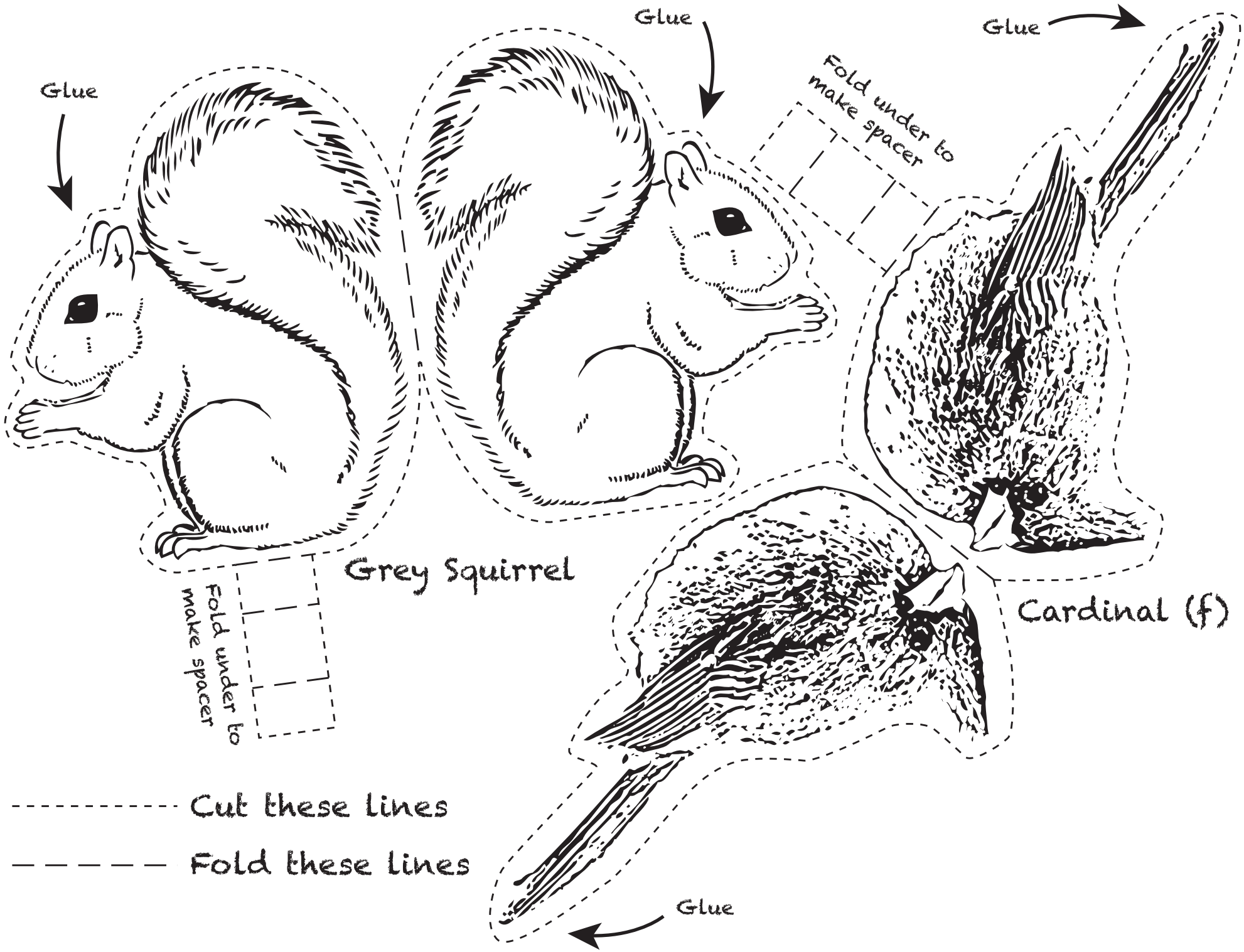
Stable: A stable structure has everything in balance so it neither falls apart nor falls off its support.

Structural: The parts which give a building or other construction its strength and shape.

Why Birds are the World's Best Engineers by Siobhan Roberts
New York Times, March 17, 2020
https://www.nytimes.com/2020/03/17/science/why-birds-are-the-worlds-best-engineers.html

The Best Nest by P.D. Eastman

This early readers' classic (for ages 3–7) tells the story of Mr. and Mrs. Bird who search for a place to build a new nest only to discover their old one is better.


Glue
Glue
Glue
Fold under to make spacer
Grey Squirrel
Fold under to make spacer
Cardinal (f)
Cut these lines
Fold these lines
Glue