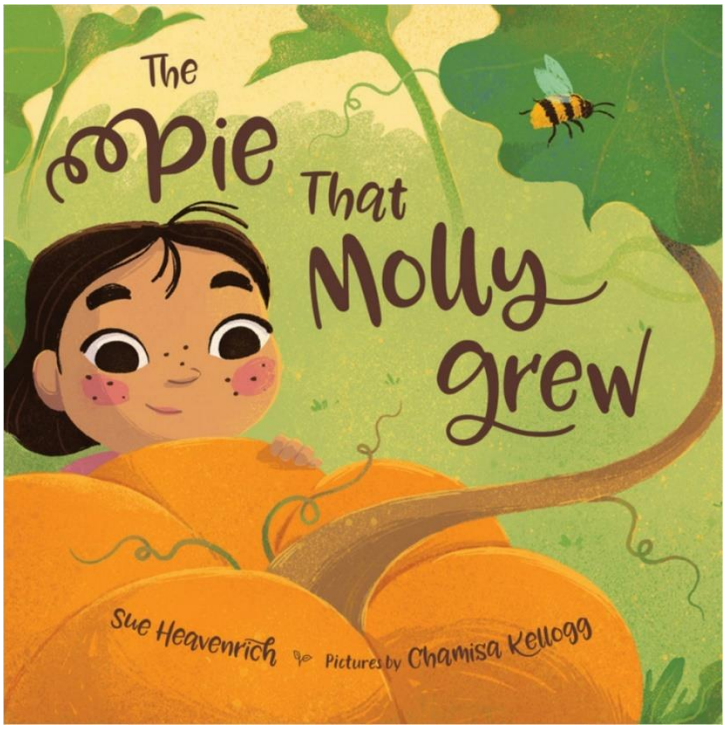
The Pie that Molly Grew
Activity Kit



By Sue Heavenrich
Illustrated by Chamisa Kellogg
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About the Book

Using "The House That Jack Built" rhyme scheme, we begin with the planting of a single seed. Under Molly's watchful eye and care, each stage of growth--from the seed to the sprout to the leaves to the final fruit on the vine--is showcased. And at the end, Molly bakes her pumpkin into a delicious pie for everyone to share in a celebration of gratitude. All from the seed that Molly sowed.

About the Author

Sue Heavenrich used to teach science, and now writes books for children. When the ground is warm and the sun is shining, she plants pumpkin seeds in her garden. She mulches and weeds and waters her plants, and counts the many kinds of bees that visit her flowers. And when it's time, she slices and dices and mixes and spices … and bakes up her favorite pie!

About the Illustrator

Chamisa Kellogg is an illustrator, art director, and animator. Her work is inspired by nature, myths and fairy tales, and her art celebrates compassion, hope, and connection. When she's not drawing, you'll find her in her garden. She's a big fan of pumpkin pie!

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Author's Note

I began writing ***The Pie That Molly Grew*** to share the wonder I see in my garden every summer: the slow unfolding of the process of growth. It's pretty amazing, when you think about it, that a seed no bigger than a penny can grow into a long, tangly vine that produces an abundance of pumpkins. But I also wanted to share the important role native bees play in pollinating the flowers. I've been counting pollinators for the Great Sunflower Project for over a decade, and am amazed at how many different kinds of bees I find in my pumpkin flowers. And without those bees carrying pollen from the male flowers to the female flowers, we'd never have pie!

Related Reading:

Pick a Pumpkin, by Patricia Toht and Jarvis. Candlewick, 2019

Seed to Pumpkin (Growing Up), by Sonia W. Black. Scholastic/Children's Press, 2021

We're Going on a Pumpkin Hunt, by Mary Wilcox and Lynn Munsinger. Charlesbridge, 2020

Runaway Pumpkins, by Teresa Bateman and Stephanie Fizer Coleman. Charlesbridge, 2020

It's a Pumpkin! by Wendy McClure and Kate Kronreif. Albert Whitman & Company, 2020

Trip to the Pumpkin Farm (Owl Diaries #11), by Rebecca Elliott. Scholastic, 2019

Before Reading the Book

- After looking at the cover of the book and reading the title, ask students what they think the book is about. Write their responses on chart paper.
- Look at the endpapers in the front and back of the book. Ask students what they notice.
- Ask if anyone grows their own pumpkins or has visited a pumpkin farm.
- For older students, have them discuss the following questions in small groups. Tape questions to wall and ask students to tape their answers beneath the questions.
    - What kinds of pollinators are they familiar with?
    - What makes pumpkin a fruit instead of a vegetable?
- Provide a list of plant-related vocabulary words. Have students look words up in a dictionary and write a definition. (You might include: compost, pollinator, fruit, pollen, photosynthesis)

Science Connections

Do Pumpkins Sink or Float?

You will need:
A large plastic tub (clear is best) full of water
Pumpkins of various sizes and types
Other things for comparison: beet or turnip, potato
Paper and markers

- Ask students to predict whether each pumpkins will sink or float. Make a tally sheet for each pumpkin where you can record how many votes for sinking or floating.
- Ask why they think the pumpkin will sink or float. (They might think big pumpkins will sink because they are heavier)
- Test each pumpkin and write the results on their tally sheet. What happened? Will other vegetables (or fruits) act the same way?
- What makes pumpkins buoyant? Cut one open and find out. There's a lot of air inside! (Along with the seeds and gloopy guts).

Watch Pumpkin Seeds Sprout

(grades 3-5) This is a great follow-up activity after counting seeds in a pumpkin (Math Connections)

Every winter I test seeds I've saved for germination rates. I lay the seeds between two damp paper towels, place in a plastic bag (recycled zip-lock freezer bags are great), and spritz with water as needed. With some adaptation, this makes a great activity for kids and, instead of stopping with germination, you can watch the seeds develop a sprout and (if they have enough energy) leaves.

You will need:
Clear containers: jars, plastic cups, zip-lock bags
Paper towels, napkins, old t-shirts, or cotton balls
Pumpkin seeds
Spray bottle with water
Magnifying lenses

If you are using a cup or jar, tear a wide strip from the paper towel and place it around the inside of the container. Fill the center with crumpled up and dampened paper towels, damp cotton balls, or wadded up and dampened sections of old white T-shirts. The stuffing should be damp but not

so wet water collects in the bottom of the container. If you use zip-lock bags you will need to fold paper towel to fit, dampen it, flatten it out, and put it inside the bag.

Place the pumpkin seeds between the paper towel and the container – so you can see the seeds. You want them spaced at least an inch apart. Put it on a sunny window sill. Spritz with water to keep the stuffing and paper towel damp. Remember to leave the zip-lock bag open.

Observe your seeds every day and make drawings and notes. What does your seed look like before you put it in the container? When does the seed begin to germinate? Do all the seeds germinate? (If not, you can calculate a germination ratio for the class) What do you notice first? When does a sprout appear? What does it look like with magnification?

Some things you might ask:

- When placing seeds in a vertical container (cup/jar) does it matter how the seed is placed? You could put some seeds pointed end up, some pointed end down, and some seeds sideways.
- Do seeds need light to germinate? Put some "test" containers in the dark and check them out. Once the seeds germinate, do they need light to continue growing?
- Can you transplant a sprout into a small pot? If your sprouts are spaced far enough apart so their roots don't tangle, you can tear off the paper towel with sprout and plant it into a pot filled with seed starting mix or potting soil.
- Can you grow a pumpkin indoors? You'll need a large container, a sunny spot, and a willingness to prune the plant to a single vine. Plus a tolerance for rambunctious growth and a way to trellis the vine, as they can grow 20 feet long!

The Great Pumpkin Roll

You will need:
Small pumpkins
Board or other material for a ramp
Chair or cinder block to support ramp
Tape measure or yard stick

Set up a ramp and roll pumpkins down it. Measure how far it rolls before it stops (from bottom of ramp). I can already hear the first question: should we remove the stems before rolling them? Great question!

- Do pumpkins roll okay with their stems? Do they roll better – and farther – without stems? What does the stem do to their rolling?
- How can we keep pumpkins from falling off the ramp? What a great opportunity to redesign the ramp so pumpkins stay on it!
- What happens if we make the ramp steeper? Or less steep? How does that affect the distance the pumpkin travels? Measure the height of the top of the ramp. (Older kids: figure out a way to describe slope using math)
- How do pumpkins compare to other round things that can roll down the ramp? What contributes to the differences? (Weight? Whether surface is smooth or ribbed?)

Math Connections

Make a Paper Plate Pie Chart

Did you know that, depending on how large you cut them, the average pie pan provides 6 to 8 slices of pie?

Depending on your class size, divide into groups of 6 or 8.
Give each group a paper plate that you have already cut into that many equal slices.
Each person will color their slice to show their favorite kind of pie, so create a color guide:

Red for cherry
Orange for pumpkin
Blue for blueberry
Green for apple

After coloring their pie slice, they piece their group pie chart together. If there is another slice with the same color, they go next to each other. Once the slices are in place, glue them onto a sheet of paper or a whole paper plate. Then the group can share their pie chart with others.

To make a bigger pie chart for the whole class – trace an extra-large pizza pan on a sheet of paper and divide into as many slices as there are students. After students have colored their slice, have them hang it on a line (or tape to a wall). Then collect all the slices of one pie color to piece together on a sheet of chart paper. Add pieces of another pie color until you have a completed pie chart!

How do you Measure a Pumpkin?

You will need:
tools to measure things: fabric or paper tape measures, string, rulers, kitchen scales
a few pumpkins (different sizes, different varieties)
a bag of sugar, a dictionary

Have students work in pairs or small groups.

- Ask them to describe their pumpkin. Younger students could draw what it looks like; older students could write their observations.
- Have them figure out how to measure the height of their pumpkin. Does this height include the stem?
- Explain what circumference is, and have them measure that. What tools are most useful?
- How heavy is their pumpkin? How does it compare to a book, or bag of sugar?

More pumpkin math for older kids:

- Can they figure out a good way to measure the radius? (Place a ruler alongside perpendicular to table and use a pencil or other ruler to measure from center)
- Can they figure out the diameter of the pumpkin?

- Have them find Pi (π) by dividing the circumference by the diameter. (If it's Pi-day, they can use a pumpkin pie to do this calculation)
- Can they come up with a way to measure – or describe – the pumpkin's volume? (The amount of space the pumpkin takes up)

How Many Seeds in a Pumpkin?

You will need:
One or more pumpkins (different sizes)
A knife to cut the top
A spoon for seed-scooping (though hands work well)
A bowl for collecting seeds
A bucket for pumpkin guts (the goopy stuff)
Newspapers or plastic table cloth to put under pumpkin
A colander
Trays or cookie sheets
Wax paper

If you have a large pumpkin and a small pumpkin, have the students predict which one will have the most seeds before counting the seeds.

Begin by observing the pumpkin. You may notice ribs that run lengthwise from stem end to bud blossom end. How many ribs does your pumpkin have. If you have more than one pumpkin, you can discover whether pumpkins with more ribs have more seeds.

Cut the pumpkin in half lengthwise. Have students observe the inside of the pumpkin. How big is the cavity? Where are the seeds attached?

Scoop out the seeds, separating them from the goopy pumpkin guts. Put them in a colander to rinse and then spread them out on wax paper-lined trays to dry overnight. Once the seeds are dry, have each student take a handful and count them. When they are finished, have them write their total on the board (or class recording sheet) and put the counted seeds on a clean tray.

If you are saving seeds to plant, let the seeds dry on a paper towel-lined tray for a month. Stir them a bit each day. Then sort the seeds, discarding any with mold or mildew. Put the seeds you're saving in a brown paper lunch sack or an envelope and label with the name of the pumpkin variety and the year.

Engineering connections

Pumpkin Catapults

You will need:
8 - 10 Popsicle or craft sticks/student
3 Rubber bands/student
1 Plastic spoon/ student (the more flexible, the better)
A long tape measure or yard stick
Protractor (for older kids)
Items to launch: pumpkin seeds, candy pumpkins, tinfoil balls, erasers, water bottle caps …

Catapults are levers that, when pulled back and released, fling things through the air. People have been using catapults to send stuff – including pumpkins – flying for thousands of years.

Stack seven popsicle sticks together and secure one end with a rubber band.

Slide one popsicle stick between the bottom and the next one. Secure the other end of the stick stack with a second rubber band.

Attach the spoon to the single popsicle stick with third rubber band. Your catapult is ready for action.

Before testing catapults, establish a launch area and a target zone. And set up some rules of engagement, such as: no one launches anything while people are in the target zone. If you don't have a long tape measure, you might want to tape some distances on the floor.

- Launch a variety of things and observe how far they travel. Test each thing three times and collect data on a chart. Which things flew the farthest? Which things barely went anywhere? Can you explain why this happens? (Is weight an issue, for example)

- What happens if you move the popsicle stick with the spoon? Use the best flyer to test what happens with different launch angles of your catapult. How might you measure the launch angle?
- What happens if you add popsicle sticks to the stack? Or if you take some out?
- What happens if you put your catapult on top of a dictionary (or on top of a pumpkin)?

Recycling Pumpkin Shells (Boats and Bird Feeders)

Small pumpkins (great way to use pumpkins that survive Rolling)
Netting
String
Pencils, old paintbrush handles, chopsticks, sticks
Thick paper (for sails)
Cardboard (for paddlewheels)
Rubber bands
Playdough
Place to float boats

Cut the pumpkins in half and scoop out the insides. You can save the seeds to count (math) or roast or plant (science connections).

Pumpkin boats:

- Use just the pumpkin shell as a boat. How much of a load can it carry before sinking? How far will it travel with a single push? If there is a stream nearby, you can have a boat race, with boats carried on the current
- Can you create a boat that uses wind power? Use playdough to fix a mast in your boat. (Or have an adult melt a candle to fix the mast). How does your boat sail?
- Can you design a paddleboat? Think about how you might use pencils to support the paddlewheel, cardboard to make the paddlewheel, and rubber band to power the paddlewheel.

Pumpkin bird feeders

- How can you support your pumpkin shell so that it can hang from a tree branch? Think about how you might use netting around the bottom, or punch holes and tie string. Consider the weight of birdseed.
- Hang up the pumpkin and fill with seeds. Do birds visit it? Does anything try to eat it?

Language Arts connections

Write About a Process

The Pie that Molly Grew shows how a plant grows from seed to fruit. Have students write about a process they are familiar with. It can be something they make (a birdhouse), or something they cook (a sandwich), or a natural process they observe (how a butterfly grows from egg to adult).

- List the steps in this process. Review them to make sure they are in the right order.
- Explain each step in detail. If you're writing about "how to build" something or a recipe, your first step might be a list of materials and tools or ingredients to gather before you begin. If you're writing about something in nature, you might need to do some research.
- Draw some pictures to show the different steps in your process.

Write A Cumulative Tale

The Pie That Molly Grew is a cumulative story. A cumulative story is one in which each new scene builds upon the previous ones, and it's all repeated in the text. You are probably familiar with many of them: *The Old Woman Who Swallowed a Fly, The House that Jack Built, A Hole in the Bottom of the Sea*. Younger students might want to work together to create a cumulative story, while older students can write their own story.

First, brainstorm some ideas. Write them down on a piece of paper. Here's a few prompts to get you started:

- what I saw at the zoo
- things I'm packing for a trip (to Mars? to visit Aunt Bertha?)
- animals that live in a tree
- a runaway cookie
- there once was a monster that ate…

Now you need another sheet of paper to write a Really Rough First Version of your story. This is where you tell what's happening in the story, and have characters that do stuff. Once you've got it on the page, let it sit for a bit. Then….

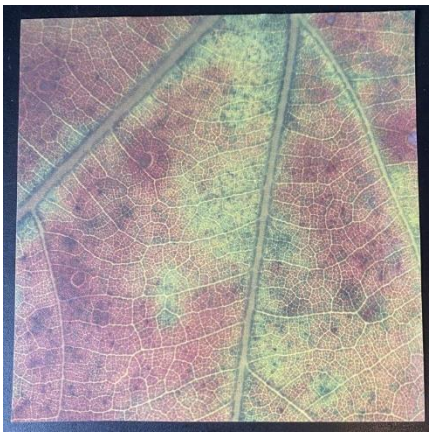
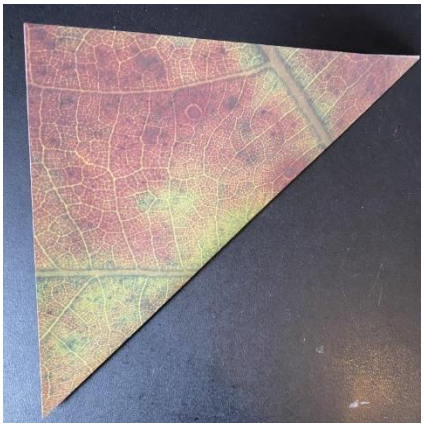
Get another sheet of paper to write Another Draft. This is where you add details, take out things that don't make sense, put in some dialog, create adventure. You might want to try writing it in rhyme, or in first person. You can repeat this step as many times as you want until you are satisfied with your story. Then…

Share it! Read it out loud to a friend or grandparent over the phone. Draw pictures to go with it. Make a book. Sing it. Record it. Make it into a video. Tell it to your stuffed animal buddies. Tape it to the fridge. Fold it really small and send it into space (you'll have to figure this one out). Mail it to a cousin who lives far, far away or maybe just the next town over.

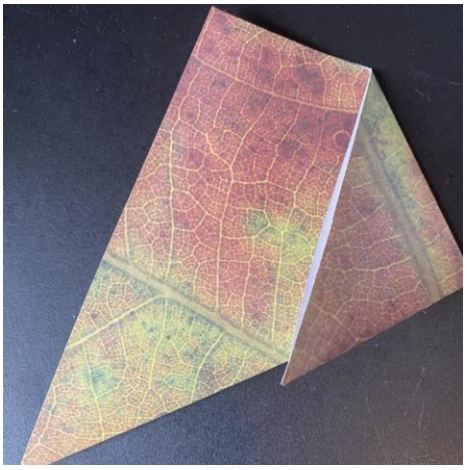
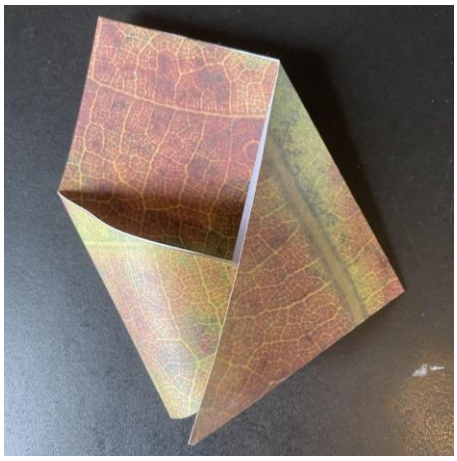
Art Connections

Fold an Origami Seed Envelope

You will need:
6” x 6” (or 15 cm x 15 cm) squares of paper – they can be origami paper, or cut from recycled magazines, gift wrap, or a brown paper bag.

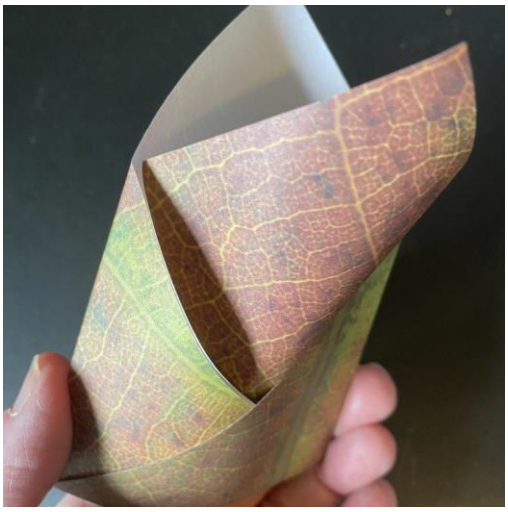



Fold one corner to opposite to make a triangle.

Bring one side corner over more than half of the way, but not quite 1/3. Press the fold on the side.

Bring the other corner over and slide the end in between the folded paper. Press the fold on the side.



Open the top – that's where you put in the seeds.
Then fold the top over to make an envelope and use a sticker to hold it shut.

Make a label and write what kinds of seeds are inside and use it to fasten your seed envelope closed.