



Under the Home

*First Grade Science
Lesson Guide Printout*

Learn from the Masters

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Lesson 1 Guide: Two Children and Their Pets

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

The chapter introduces brother and sister, Peter and Polly. Peter is four years old, and Polly is eight years old. They live on a farm and enjoy outdoor activities such as playing in the snow, picking flowers, and wading in brooks. They have many pets including a cow, a horse, a dog named Wag-wag, and cats named Blacky and Black Baby.

Vocabulary

- **Brook:** A small stream.
- **Snow Fort:** A walled structure made from snow.
- **Manger:** A food box from which cows, horses, or other animals eat.
- **Bone:** The hard, whitish tissue making up the skeleton in humans and other vertebrates.
- **Backbone:** Series of bones extending from the back of the neck to the tailbone. Also called a 'spine.'
- **Lungs:** Two elastic sacs used for breathing and located in the chest area of some animals.

Concepts

Peter, Polly, and all of their pets (cows, dogs, cats, horses) are mammals.

Facts about mammals:

- They are warm-blooded. They stay warm even when their surroundings are cold.
- They have a backbone (unlike worms).
- They breathe with lungs (not with gills like a fish or through skin like worms).
- They have hair or fur (not feathers like birds or scales like snakes).
- Females usually give birth to live babies (not born from eggs like turtles).
- Females feed babies their milk (unlike birds that feed babies food such as insects, worms, berries, and seeds).

Did you know humans are mammals? Feel your forehead. Unless it is an extremely hot day outside, your forehead is warmer than the air around you, because you are warm-blooded. Feel your back and find your backbone. Feel the hair on your head. When human babies are born, they are born alive and often crying and wiggling. Many human mothers nurse their babies with their milk.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Mammals

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Reinforce that mammals have hair, lungs, and backbones.

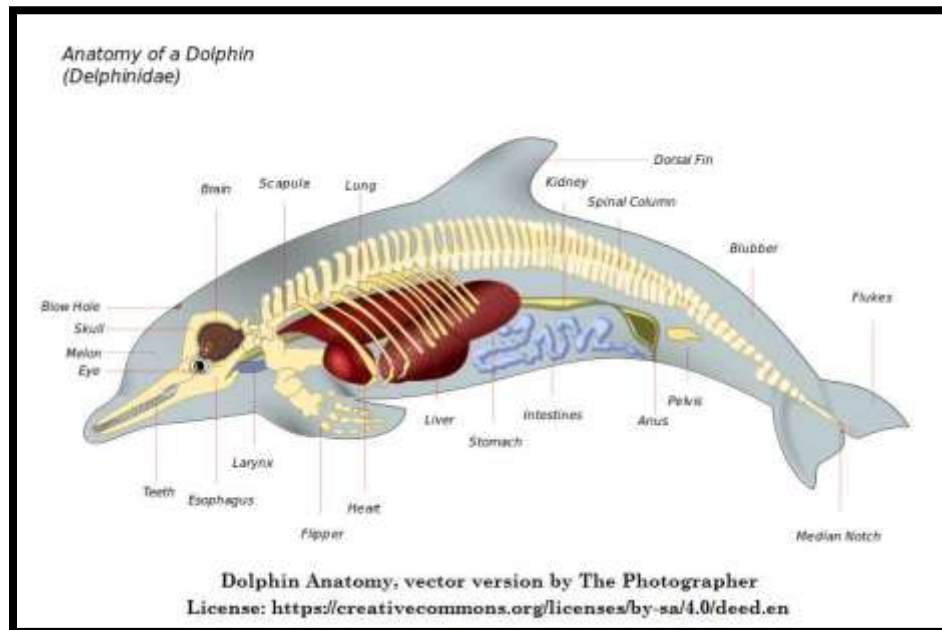
Materials: Crayons or markers and paper.

Did you know?

- Dolphins are not fish, and neither are whales. They are mammals.
- Like many mammals, Dolphins have hair. Dolphins are born with chin hairs that fall out shortly after birth.

Procedure:

Use the picture below as a guide to draw a baby dolphin including the dolphin's backbone and lungs. Draw a few chin hairs on the baby.



Review Questions

1. **Who are Peter and Polly?** A brother and sister who live in a small farming town.
2. **The story mentions a barn and a horse. Do you think Peter and Polly live in the city or in the country?** Peter and Polly live in the country.
3. **Peter and Polly build snow forts in the winter. Why can't they build the forts in the summertime?** There is no snow on the ground in summer. It is too warm to snow.
4. **What might you find in a brook?** Water, fish and other aquatic animals, rocks, sand, mud, and plants are all things found in brooks.
5. **What do people typically put in mangers?** People put food for animals in mangers.
6. **Is a chicken a mammal?** Why or why not? A chicken is not a mammal. Unlike mammals, chickens lay eggs, have feathers, and females do not feed their babies milk.
7. **Name one mammal in addition to humans, dogs, cats, horses, and cows.** Other mammals include squirrels, racoons, deer, whales, etc.

Lesson 2 Guide: Playing School

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

It is September, and Polly has started learning at school. Peter is too young for school. Peter, Polly, Tim, their pets, and their dolls decide play school in their barn. They plan to use pumpkins as chairs.

Vocabulary

- **School:** A place where children learn.
- **Schoolhouse:** A building where school is held.
- **Universe:** Everything in existence including the Earth, Sun, Moon, and other planets and stars.
- **Observation:** Watching something intently and noting or recording items of interest.
- **Experiment:** A procedure undertaken to make a discovery or demonstrate a known fact.
- **Science:** Studying how the universe works through observation and experiment.

Concepts

Science is a common subject that children study during school.

Scientists are people who study the universe and/or apply scientific knowledge to solve problems. You might decide to be a scientist when you grow up.

Common science subjects include:

1. Biology - the study of life.
2. Chemistry - the study of matter.
3. Physics - the study of matter, energy, forces, and motion.
4. Oceanography - the study of the ocean.
5. Geology - the study of the Earth.
6. Meteorology - the study of weather.
7. Astronomy - the study of the universe, stars, and planets.
8. Computer science - the study of computers.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Draw the Sun and Planets in Our Solar System

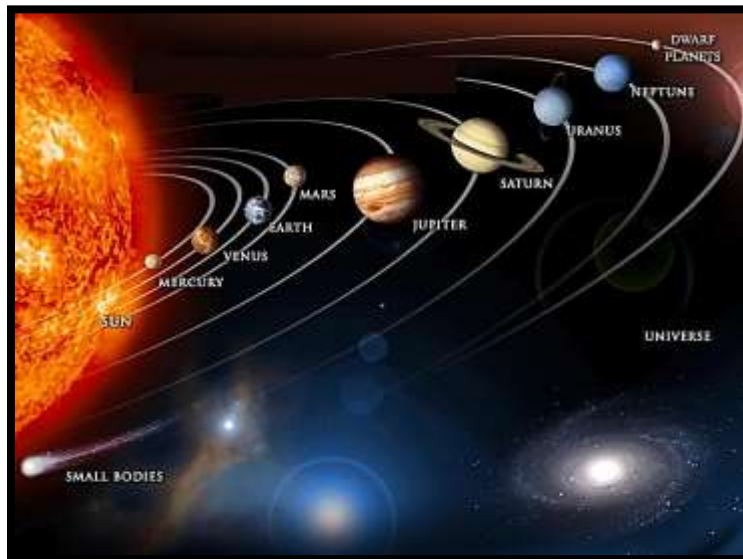
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Astronomy is the study of the universe, stars, and planets. Examine and draw the solar system, including the sun, earth, and other planets.

Materials: Pencil, crayons or markers, and paper.

Procedure:

- Examine the picture of the solar system below. Look for our planet, the planet labeled 'EARTH.'
- Sketch and color the sun and planets, including the fiery SUN and our planet EARTH.



Review Questions

1. **Why do people go to school?** People attend school to learn.
2. **Describe what it means when you 'observe' a bird?** When you observe a bird, you watch the bird and note or record what it looks like or what it does.
3. **What might a scientist study?** Scientists study varied topics including the earth, living things, forces, motion, weather, computers, and the universe.
4. **Is the Earth located inside the universe?** As far as we know, everything in existence is in the universe.
5. **Is the Sun located in the universe?** As far as we know, everything in existence is in the universe.
6. **Are you in the universe?** As far as we know, everything in existence is in the universe.

Lesson 3 Guide: Polly's Pupils

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter, Polly, Tim, their pets, and their dolls decide play school in their barn. The children, the dolls, and the animals sit on large, stemless pumpkins. Polly sits in front and plays teacher. Polly drills them in math, asking Collie what two plus three equals. Peter and Tim announce it is recess and roll their pumpkins down the driveway.

Vocabulary

- **Teacher:** A person who helps students learn through the transfer of knowledge and skills.
- **Pumpkin:** A large rounded orange-yellow fruit with a thick rind, edible flesh, and many seeds.
- **Vine:** A climbing or trailing woody-stemmed plant of the grape family.

Concepts

Pumpkins are the fruit of a squash plant.

Facts about pumpkins:

1. Pumpkins grow from tiny fruits attached to flowers which grow off long vines.
2. People eat pumpkin shells, seeds, flesh, and flowers. Pumpkin pie, pumpkin soup, and pumpkin muffins are popular items made from pumpkin.
3. Many people carve pumpkins into Jack-O-Lanterns for Halloween.
4. Some people compete to grow 'Giant Pumpkins.' The largest Giants can weigh more than 2000 pounds, close to what a small car weighs.
5. Other people build machines to throw pumpkins in pumpkin chunking contests. The team with the machine that throws the pumpkin farthest wins.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Pumpkin Formation Comic Strip

Objective: Draw a comic that shows in sequence how a pumpkin grows (and what it might become at Thanksgiving dinner!)

Materials: Pencil, crayons or markers, and paper.

Procedure:

- Examine the picture below. Note the vines, leaves, flowers, and pumpkin.
- Draw two lines on a piece of paper to divide it into four frames or comic panels.
- Draw a comic strip that shows how a pumpkin grows and is used by people.
- In the first panel, draw a vine in a garden.
- In the second panel, draw a flower growing on the vine.
- In the third panel, replace the flower with a pumpkin growing on the vine.
- In the fourth panel, draw some delicious pumpkin pie.



Review Questions

1. **What do teachers do for students?** Teachers do many things for students, parents, schools, and communities. Teachers convey knowledge and ideas, demonstrate concepts, and explain things to students. Teachers also lead classes, create and give assignments and tests and grade student work. Teachers also spend lots of time running extra-curricular activities such as sports and clubs.
2. **Is a pumpkin a plant or an animal?** A pumpkin is a plant.
3. **Describe what a ripe pumpkin looks like after it has been plucked off the vine.** A typical pumpkin has a rounded orange body and a dark green stem.
4. **Describe how a pumpkin grows from a vine.** A vine first grows a flower with a tiny fruit attached to the flower. The tiny fruit then grows into a pumpkin.

Lesson 4 Guide: A Bite of Apple

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly help their father gather crab apples so their mother can make jelly. Polly decides to eat an apple. When Polly raises the crab apple to take a bite, a wasp on the apple stings her tongue. Polly's mother says people should 'Look before they bite.'

Vocabulary

- **Jelly:** A sweet spread made from fruit juice and sugar and boiled until thick.
- **Crab Apples:** A small, sour apple.
- **Tumbler:** A drinking glass with straight sides and no handles.
- **Exoskeleton:** The hard outer shell of insects.
- **Invertebrates:** Animals with no backbones.
- **Anatomy:** The study of structure and internal workings of living creatures.

Concepts

In the story, a wasp stings Polly's tongue. A wasp is a winged, black and yellow striped insect with a narrow waist and a sting.

Facts about insects:

1. Insects are animals like cows, birds, and humans.
2. Insects are invertebrates (they have no backbone).
3. Insects have a hard outer shell called an exoskeleton.
4. Nearly all insects have antennae.
5. All insects have 6 legs.
6. Female insects lay eggs. Their young are not born alive.
7. Insects walk, fly, and/or swim.
8. Many types of insects live alone, but some live in large groups (e.g. bees in a hive).

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Wasp External Anatomy

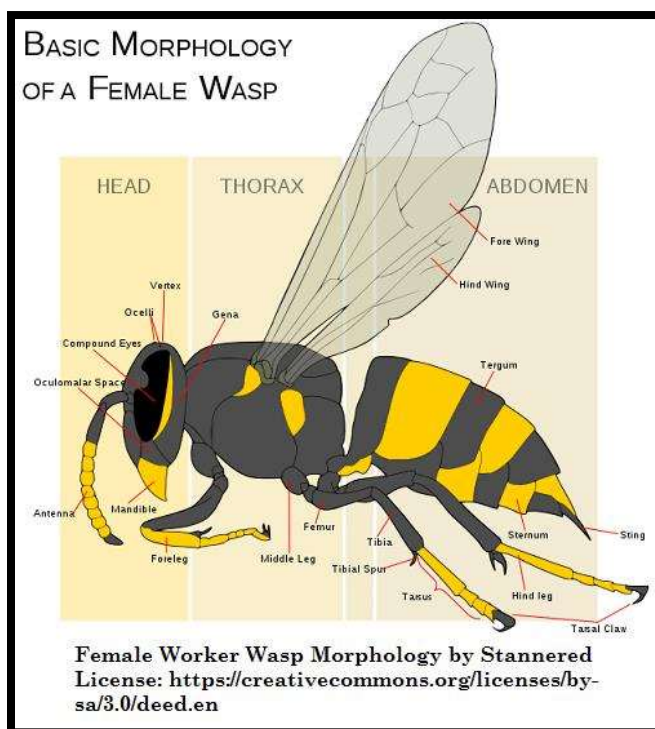
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Study the external anatomy of insects.

Materials: Crayons or markers and paper.

Procedure:

- Study the picture of the female wasp below. Find the wasp's head, antenna, eye, wing, legs, and sting. Although not shown by the viewpoint of the picture, wasps have 2 antennae, 2 eyes, 2 wings, and 6 legs.
- Use the picture below as a guide to draw a wasp including the wasp's head, antenna, eye, wing, legs, and sting.



Review Questions

1. **How did Peter and Polly help their mother?** They go to gather crab apples so their mother can make crab apple jelly.
2. **Why did Polly believe the crab apples were ripe?** The seeds of the crab apples were black.
3. **What happened to Polly when she tried to bite an apple?** A wasp on the apple stung her tongue.
4. **Why should we 'look before we bite?'** To make sure we are not biting something we would rather not eat, like a wasp.
5. **Are you an invertebrate? Why or why not?** No, you are not an invertebrate because you have backbone. You do not have a hard outer shell or exoskeleton.
6. **A spider has 8 legs. All insects have 6 legs. Therefore, is a spider an insect?** No, a spider does not have six legs.

Lesson 5 Guide: The Maple-Leaf Chain

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly shows Peter how to make chains out of red maple leaves and yellow elm leaves, using stems as pins to hold leaves together. Peter and Polly make themselves wreathes out of leaves and wear them on their heads. Peter makes a necklace out of the leaves. Polly makes a long garland for the fence. When the children check their leaf chains the following day, the bright red and yellow leaves are brown and no longer very pretty.

Vocabulary

- **Maple Tree:** A tree or shrub with colorful autumn leaves, grown for its beauty, its timber, or its delicious maple syrup. Its leaves may turn any of red, yellow, purple, black, orange, pink, magenta, blue and brown in the fall.
- **Elm Tree:** A tall tree whose jagged-edged green leaves turn yellow and fall every autumn.
- **Leaf Stem:** The stalk attaching a leaf to a tree
- **Chain:** Identical items fastened together in a line.
- **Wreath:** An arrangement of flowers, leaves, or stems fastened in a ring.
- **Garland:** A wreath or chain of flowers and leaves, worn on the head or hung as a decoration.

Concepts

Trees are plants. Trees often have a central wood trunk supporting branches and leaves.

Facts about trees:

1. Trees are the oldest living things on Earth.
2. All sorts of living things thrive in trees, including insects, lichens, birds, and squirrels.
3. Trees make oxygen. Humans and other animals need oxygen gas to live. Breathe in and out, and thank the trees.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Nature Walk

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Gather leaves and create chains, wreaths, and/or garlands.

Materials: Leaves.

Procedure:

- With the help of an adult, venture outside to gather some leaves.
- Remove the leaf stems and use the stems to pin the leaves together into a chain.
- Make a chain, a wreath, and/or a garland out of the leaves.
- See who can make the longest leaf chain.



Review Questions

1. **What color are the maple tree leaves in the story? What color are the elm tree leaves?** The maple leaves are red. The elm tree leaves are yellow.
2. **How do the children connect the leaves together?** Using the leaf stems.
3. **How are leaf chains and wreaths different?** Leaf chains are multiple leaves strung together in a straight line. Leaf wreaths are multiple leaves strung together to form a closed circle.
4. **How are leaf chains and wreaths similar?** They are both made of multiple leaves strung together.

Lesson 6 Guide: In the Woods

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Tim venture into the woods to hunt for beechnuts. At first, they cannot find any nuts. The squirrels have eaten them. Eventually, Peter finds some beechnuts. The nuts are small, brown, and have three corners. Tim tries to find nuts in a maple tree. Peter tells him that beechnuts only come from beech trees. The boys both fill their pockets with nuts. On the way home, Tim discovers he has lost all his nuts. They have fallen out of a hole in his pocket.

Vocabulary

- **Beech Tree:** A large tree with smooth gray bark, glossy leaves, and hard, pale wood. Its fruit, the beechnut, is an important food for numerous wild birds and mammals.
- **Beechnut:** The small triangular brown fruit of the beech tree, pairs of which are enclosed in a prickly case.
- **Prickly:** Covered in sharp points.
- **Scuff:** Scrape the surface of one object against another.

Concepts

Squirrels are tree-dwelling rodents with bushy tails that typically eat nuts and seeds.

Facts about squirrels:

1. Squirrels are animals, mammals, and vertebrates (they have backbones).
2. Squirrels are 'omnivorous' which means they eat both plants and animals. They eat plants such as nuts, seeds, and fruits. Some squirrels also eat insects, eggs, small birds, snakes, and small rodents.
3. Squirrels gather food year-round and bury food for winter.
4. Some squirrels hibernate (sleep during winter), waking every few weeks to feed. Other squirrels, such as gray squirrels, stay awake all winter.

Types of squirrels in the US include gray squirrels, red squirrels, fox squirrels, ground squirrels, and flying squirrels.

1. Gray squirrels bury nuts all over the place and sometimes forget where they buried them. This helps new trees grow.
2. Red squirrels store a big pile of nuts in one place.

Did you know that flying squirrels don't actually fly? Instead, they soar from tree to tree with the help of a built-in parachute. Their 'parachute' is a thin flap of skin stretching between their wrists and ankles.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Feed the Squirrels

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Hide peanuts or nuts for the squirrels to find.

Materials: Peanuts or nuts.

Procedure:

- Get some peanuts or nuts.
- Go to your backyard or other outdoor area.
- Use a spade or shovel to dig a shallow hole and place the nut inside.
- Cover up the nut with the soil.

Review Questions

1. **Why did Peter and Tim explore the woods?** Peter and Tim visited the woods to gather beechnuts.
2. **Why did Tim think they wouldn't find any nuts?** Tim believed the squirrels had eaten all the nuts.
3. **Which tree grows beechnuts - the beech tree or the maple tree?** Beech trees grow beechnuts.
4. **Why did Tim lose all his beechnuts?** The beechnuts fell out of Tim's pocket.

Lesson 7 Guide: A Cap of Burdock Burrs

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly construct items out of Burdock burrs. Polly makes a cap out of burrs and wears it on her head. The cap becomes stuck in Polly's hair. Peter removes a few pieces of the cap, but also accidentally pulls Polly's hair. The children run home for help from their mother. Their mother offers Polly a choice. The first option is to remove the burrs by cutting Polly's hair short. This option will not hurt. The second option is to pull the burrs out. This option will be painful, but it allows Polly to keep her long hair. Polly chooses to keep her hair. Although it hurts, Polly does not complain while her mother removes the burrs.

Vocabulary

- **Cap:** A kind of soft, flat hat without a brim.
- **Bur:** A prickly seed case or flower head that clings to animals and clothes.
- **Burdock:** A large plant of the daisy family. The hook-bearing flowers become woody burrs and cling to animals' coats for seed dispersal.
- **Morphology:** The exterior structure of a plant.

Concepts

In the story, Peter and Polly construct items out of a plant called a Burdock. A plant is a living organism, typically with roots, stems, and leaves. Examples include trees, shrubs, herbs, grasses, ferns, and mosses.

External anatomy of plants:

- Plant roots are the tough, sometimes woody shoots that grow into the ground. Roots take in water and nutrients from the soil.
- Leaves are often the flat, green growths on the upper part of the plant. Leaves are green because of a substance called chlorophyll.
- Stems are the main stalk of the plant. They are usually above ground, but sometime also go underground.
- Flowers are the seed-bearing part of the plant and often have brightly colored petals.
- Plants grow seeds. Seeds are small plants in a protective covering. A seed is capable of growing into another plant.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Morphology of a Burdock Plant

Objective: Reinforce that mammals have hair, lungs, and backbones.

Materials: Pencil and paper.

Procedure:

- Zoom in to examine the labeled picture of the Burdock plant below.
- Recite aloud the labeled parts of the plant, including the leaves, stem, and burrs.
- Sketch your own Burdock plant.
- If you are able, draw the arrows and names of the parts on your Burdock plant sketch



Review Questions

1. **What did Polly use to make a cap?** Polly used Burdock burrs to make a cap.
2. **What happened to Polly's hair?** Burrs became tangled in Polly's hair. Polly's mother had to pull the burrs out of Polly's hair.
3. **Name two parts of plants.** Any two of stems, roots, leaves, flowers, seeds, etc.
4. **Why do plants have seeds?** Producing seeds enables plants to reproduce, or make more plants.
5. **Why do plants have roots?** Roots pull up water and nutrients from the soil for use by the rest of the plant.
6. **Why are plant leaves often green?** Plant leaves are often green because they contain chlorophyll.

Lesson 8 Guide: Peter's Fifth Birthday

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter's birthday is on the last day of October, on Halloween. Peter will have a birthday party this year. Peter's father carves jack-o'-lanterns for the party. The children play an apple game, where they attempt to bite apples hanging from the ceiling by strings. They play tag, leapfrog, and hide and seek. They eat dinner and have birthday cake for dessert.

Vocabulary

- **October:** The tenth month of the year. In the US, the second month of autumn.
- **Sled:** A vehicle on runners that slides or is pushed over the snow.
- **Leapfrog:** A game in which players vault with parted legs over the backs of others who bend down.
- **Gravity:** A force of attraction that pulls two objects together.

Concepts

Peter and his friends play leapfrog. Why do we come back down after jumping up?

Gravity is a force which pulls us back toward the Earth as we jump.

If you trip and fall and scrape your knees, you can blame gravity!

- If there was no gravity and you didn't encounter any forces (friction, resistance of the air), you could jump and move upward forever.
- Astronauts on the space station in outer space can float through the air. There is less gravity because the astronauts are far away from the Earth

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Falling Objects

Objective: Experiment with the force of gravity.

Materials: Small objects that can be dropped to the floor without harm (e.g. pencil, cotton ball, plastic bottle cap, etc.).

Procedure:

- Drop each item and observe how gravity pulls them back toward the Earth.
- Gently toss each item into the air and observe how gravity pulls them back toward the Earth.
- Jump as high as you can. What happens? Why do you come back down?



Review Questions

1. **Why is Peter excited for his birthday?** Peter is excited to have a party for his birthday.
2. **What games do the children play at Peter's birthday party?** The children play an apple game, tag, leapfrog, and hide and seek at Peter's birthday party.
3. **What does Peter's father carve for Peter's birthday party?** Peter's father carves jack-o'-lanterns for Peter's birthday party.

Lesson 9 Guide: Peter's Funny Bed

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter, Polly, and Tim walk to the sandbanks and see the swallow holes up high. The swallows are not home. They have probably flown south for the winter. The children build forts and towns out of sand and sticks. Polly and Tim bury Peter in the sand. They cover Peter's face with a hat. Peter falls asleep under the sand. When Peter awakens, he is alone. He digs himself out and walks home. He is not happy with Polly and Tim.

Vocabulary

- **Sandbank:** A large mass of sand, as on a shoal or hillside. (Dictionary.com)
- **Fort:** A fortified building or alternatively, an army post.
- **Migration:** The movement of animals, often seasonal, from one location to another.

Concepts

In the story, there are no swallows in the sandbanks because they have migrated to the warm, sunny south. Migration is the seasonal movement of animals.

Facts about migration:

1. As Polly mentioned in the story, birds migrate when they fly south in fall and north in the spring.
2. Fish migrate through the water to feed or spawn (lay eggs to make baby fish).
3. Insects such as butterflies migrate. For example, monarch butterflies migrate in groups. No single butterfly makes the whole journey. The butterflies go through multiple generations to reach their destination.
4. Other animals such as mammals, amphibians, reptiles, and crustaceans also migrate.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Migration Simulation

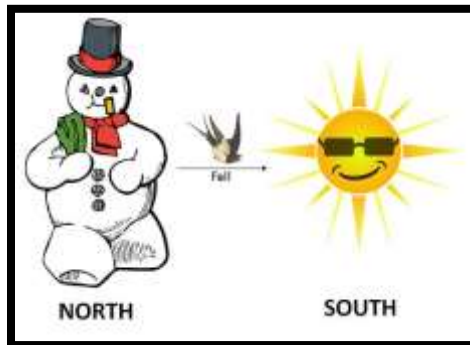
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Reinforce that certain birds, such as North American barn swallows, migrate to the sunny south in winter and migrate back north in the spring.

Materials: Pencil, crayons or markers, and paper.

Procedure:

- On one piece of paper, draw a cold snowman and the word 'NORTH.' Place this piece of paper in your kitchen.
- On another piece of paper, draw a large sun and the word 'SOUTH.' Place this piece of paper in your living room.
- Pretend to be a migrating swallow. Your kitchen is the brisk north, and your living room is the sunny south.
- First, pretend it is fall and it is getting colder. Fly south from your chilly kitchen to your warm living room.
- Take a rest on your couch. Your wings are tired from all of that flapping!
- Next, pretend it is spring. It is getting warmer in the north, and you can now find enough food there. Fly back from your living room in the sunny south to your kitchen in the north.



Review Questions

1. **Why aren't the swallows home?** The swallows have most likely migrated to the warm, sunny south.
2. **What do the children build out of sand?** The children build forts and towns out of sand.
3. **What happens to Peter after Polly and Tim bury him?** He falls asleep. Polly and Tim leave him all alone.
4. **Do any animals other than birds migrate?** Yes, some fish, insects, mammals, and other animals also migrate.

Lesson 10 Guide: The Stone-Wall Post Office

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly play post office. The mailboxes are holes in a stone wall. The mail is leaves or rocks. The children decide to fill their post office boxes with butternuts. The squirrels scold the children while they work. The next day, when Peter and Polly return to their post office, their nuts were gone. The squirrels have taken the nuts. The children fill the mailboxes back up with nuts for the squirrels.

Vocabulary

- **Hayfield:** A field where hay is being made.
- **Post Office:** A place to send and receive paper mail and packages.
- **Post Office Box:** A box to hold mail for a particular order.
- **Scold:** To express anger for a fault.
- **Butternut Tree:** A type of walnut tree, also known as white walnut.

Concepts

In the story, the children gather butternuts from butternut trees. Trees have several parts including roots, trunks, branches, and leaves.

1. Roots stretch down into the soil to collect water and nutrients.
2. Trunks are the main woody stem of the tree.
3. Branches are woody stems that split off from the main trunk.
4. Leaves are flat, green or other colored blades attached to a stem.
5. Trees also grow seeds and fruits.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

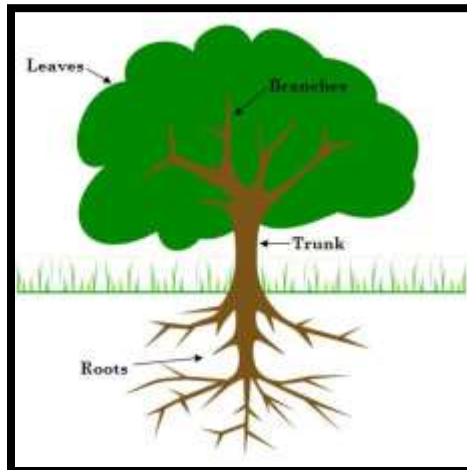
Activity 2: Morphology of a Tree

Objective: Sketch the main parts of a tree.

Materials: Pencil, paper

Procedure:

- Examine the labeled picture of the tree below.
- Point out and recite aloud the labeled parts of the tree, including the leaves, branches, trunk, and roots.
- Sketch your own tree.
- If you are able, draw the arrows and names of the parts on your tree drawing.



Review Questions

1. **What do Peter and Polly do with the old stone wall?** Peter and Polly use the old stone wall as a post office.
2. **What do Peter and Polly put in their mailboxes?** Peter and Polly put leaves, rocks, and butternuts in their mailboxes.
3. **Why do the squirrels scold Peter and Polly?** The squirrels scold Peter and Polly for taking the butternuts and placing them in the stone wall. The squirrels want the nuts for themselves.
4. **What do Peter and Polly do when their beechnuts disappear?** Peter and Polly replace the missing beechnuts with new beechnuts.
5. **Who took the beechnuts?** The squirrels took the beechnuts.

Lesson 11 Guide: The Tree with a Stone in it

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly take a walk with their father. Their father asks them to list the sights and signs of winter. The children say the ground is hard, the leaves have fallen, many birds have gone, the squirrels have taken the nuts, the flowers have dried up, the corn is cut, people cut boughs and make bonfires, and Thanksgiving is coming soon. Their father shows them a tree with a flat stone embedded in the trunk.

Vocabulary

- **Thaw:** Become soft or liquid as a result of warming.
- **Shape:** External form or outline of an area or figure.
- **Bark:** Tough and often rough outer covering of a tree (or shrub) trunk, branches, and twigs.
- **Interesting:** Worth of notice. Arousing curiosity.

Concepts

What are the signs that winter is coming?

1. The temperature drops, and it gets colder. In the northern US, it becomes quite cold and your breath forms white puffs in the air.
2. The days get shorter, and the nights get longer.
3. Some trees lose their leaves, and the grass turns brown.
4. In the northern US, precipitation (water falling from the sky) turns from rain to ice and/or snow.
5. Animals such as groundhogs disappear and go into hibernation (sleep for the winter).
6. Some animals, such as robins, migrate south to warmer areas for the winter.
7. In the northern US, the water in ponds, lakes, brooks, and rivers begin to freeze.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Search for Signs of Winter

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Go for a walk and sketch the sights and signs of winter that you see.

Materials: Pencil, notebook.

Procedure:

- Go for a walk outside with your family.
- Hunt for as many of the sights and signs of winter as you can.
- Sketch pictures of the sights and signs of winter that you see.



Review Questions

1. **What are some of the signs of winter that Peter and Polly see?** The leaves have fallen. The birds have gone south. The squirrels have gathered up the nuts. The corn is cut. The pumpkins have been taken from the fields. School has started.
2. **What is stuck in the tree trunk?** A flat stone is stuck in the tree trunk.

Lesson 12 Guide: The Boiling Springs Part I

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly get an egg and salt from their mother. They visit the blacksmith, who has a boiling spring on his pasture land. The blacksmith tells Peter and Polly how to get to the spring.

Vocabulary

- **Boiling:** Water that is warm enough to bubble and turn into steam.
- **Pasture:** Land covered with grass and other plants that animals such as cows can eat.
- **Blacksmith:** A person who makes things out of iron metal, such as horseshoes.

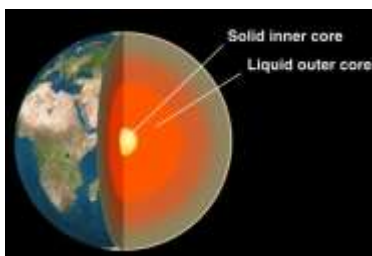
Concepts

A boiling spring (hot spring) is 'a spring of naturally hot water, typically heated by underground volcanic activity.'

Facts about hot springs:

- The water is warmed by heat from under the Earth.
- Some are pleasantly warm and used by people for bathing and relaxing.
- Some are so hot, going into them would hurt or kill a person.

Did you know the center of the Earth is blazingly hot? The deeper under the Earth's surface, the hotter it gets. The center of the Earth is a solid ball of hot metal, surrounded by a liquid sea of melted metal (see the picture below). This energy is what warms the water of boiling springs.



Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Hot Earth

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Investigate and simulate the heat source of a boiling spring.

Materials: Crayons or markers and paper.

Procedure:

- Draw the Earth's inner and outer cores. Use the picture below as a guide. Color the inner and outer cores in shades of bright red or orange to show they are very hot.
- (Instructors) Bring a pan of water to a boil to simulate a boiling spring.
- Observe the boiling water and describe it.
- The Earth provides the heat that makes a boiling springs boil. What is the heat source of your boiling water?

Review Questions

1. **What do Peter and Polly get from their mother?** Peter and Polly get an egg and salt from their mother.
2. **Why do Peter and Polly visit the blacksmith?** Peter and Polly ask the blacksmith for his permission to visit the boiling springs on his land. They also ask the blacksmith to direct them to the springs.
3. **Is the blacksmith kind to Peter and Polly?** The blacksmith is kind. He gives Peter and Polly permission to visit the springs on his land and directs them to the spring.
4. **What makes boiling springs hot?** Heat from under the Earth's surface makes boiling springs hot.
5. **Describe the center of the Earth.** The center of the Earth consists of a solid ball of hot metal surrounded by a layer of hot liquid metal.

Lesson 13 Guide: The Boiling Springs Part II

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly walk through the blacksmith's pasture. Peter pretends a goldenrod stalk is a sword. Peter and Polly see cows and black-eyed-Susan flowers. The children find 'The Boiling Spring.' They try to cook the egg in the spring water, but the egg remains cold. Peter and Polly decide to report their findings to the blacksmith.

Vocabulary

- **Goldenrod:** A plant with tall spikes of small bright yellow flowers.
- **Stalk:** The main stem of a plant.
- **Plume:** Something that is or resembles a feather, spreading outward from its base.
- **Daisy:** Flowers with yellow centers and white petals.
- **Black-eyed-Susan:** Flowers with dark centers and yellow petals.
- **Simulation:** Imitation of a situation or process.

Concepts

Cold springs are created by cool water that flows from underground.

Facts about cold springs:

1. Some springs flow year-round, other springs only flow at certain times of the year.
2. Some spring water may be healthy because the water has dissolved minerals like calcium and magnesium.
3. In the story, Peter and Polly discover the spring is a cold spring, not a hot spring. Whether hot or cold, water that comes from underground remains at a relatively constant temperature year-round. Some hot and cold springs don't freeze in the wintertime, even when rivers and lakes freeze around them.
4. Spring water under pressure may flow quickly from under the ground, making cold springs appear to boil, even though the spring water is cold.
5. Humans use cold springs for many things, including for drinking water, swimming, fishing, and watering pastures and crops.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Bubbling vs Boiling

Objective: Investigate and simulate the bubbling of a cold spring. Determine how water can bubble even when not hot and boiling.

Materials: Kitchen sink with a plug and a sprayer. You can alternatively use a deep bucket or a bathtub instead of a sink.

Procedure:

- Plug your kitchen sink, and fill it three-fourths full with water.
- If you have a sink sprayer, pull it out and submerge the nozzle fully under the water. Pull the trigger and make the water bubble with the force of the flowing water. Be careful to keep the nozzle submerged!
- If you don't have a sink sprayer, put your hands or a big spoon under the water and push the water up.

Conclusion:

How your simulation like a cold spring? How is it different?

- Both involve water. The bubbling effect is similar, but the force behind the bubbling is different.
- With a cold spring, pressurized water rushing from under the Earth's surface makes the water bubble.
- With your simulation, water rushing from your sink sprayer makes the water bubble.

Conclusion #2:

How is the cold bubbling spring simulation different from the hot boiling spring simulation from the last lesson?

- With the cold bubbling spring simulation, the energy of water rushing from the sink sprayer makes the water bubble.
- With the hot boiling spring simulation, the energy of the stove heats the water and makes it bubble.

Review Questions

1. **What does Peter use like a sword?** Peter uses a goldenrod stalk as a sword.
2. **What colors are black-eyed-Susans?** Black-eyed-Susans have yellow petals and black or dark brown centers.
3. **Why do Peter and Polly believe the water is hot?** Peter and Polly believe the water is hot because the spring bubbled like it was boiling.
4. **What does Polly do with the egg?** She submerges the egg in the springs, then removes the egg with sticks.
5. **Did Peter and Polly eat the egg? Why or why not?** Peter and Polly did not eat the egg. The egg was still cold and raw. The cold water of the spring did not cook the egg.

Lesson 14 Guide: At the Blacksmith's Shop

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly and Peter visit the blacksmith, show him the uncooked egg, and tell him about seeing black-eyed-Susans and goldenrod flowers. The blacksmith says the flowers are a sign of autumn. He points out another sign of autumn. A large group of swallows clusters around the telephone wires. The blacksmith tells Polly and Peter that every autumn, the swallows join together and migrate south for the winter. The blacksmith invites the children into his shop.

Vocabulary

- **Swallow:** A fast-flying songbird with a forked tail and long pointed wings.
- **Migrate:** Moving from one region or habitat to another, especially regularly according to the seasons.
- **Telephone Wire:** A physical wire that enables people to talk on landline telephones and exchange data.

Concepts

In the story, Peter and Polly see birds join together in preparation to migrate south for the winter. Birds are animals that typically have beaks, feathers, and wings. Most birds can fly.

Facts about birds:

1. They are warm-blooded.
2. They have backbones.
3. They are not mammals.
4. They have feathers rather than scales, hair, or fur.
5. Baby birds are often called chicks. Chicks hatch from eggs rather than being born live.
6. Many female birds feed babies chewed up worms and insects.
7. Most birds fly. Some do not, such as ostriches and penguins.

Did you know birds do not have teeth? Instead, they have hard beaks. Beaks are used for getting food, eating, grooming feathers, fighting other animals, and feeding babies.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Migration

Objective: Draw a swallow on a telephone wire. Pretend to be a swallow migrating south for the winter.

Materials: Colored or plain pencils and paper.

Procedure:

- Examine the picture of the swallow below. Note how the swallow's tail forks at the bottom into two prongs.
- Sketch a swallow sitting on a telephone wire. Draw the swallow's eyes, beak, feet, feathers, and forked tail.
- Pretend to be a swallow on a telephone wire in autumn. It is chilly outside, so shiver with cold.
- Migrate south for the winter, flap your wings, and fly around your house. It is a very long way!
- When you arrive, bask in the warm sun of the sunny south.



Review Questions

1. **What signs of autumn does the blacksmith mention to Peter and Polly?** The signs the blacksmith mentions are black-eyed-Susans, goldenrod flowers, and clustering swallows.
2. **Where do the swallows go in autumn?** Why do they go there? Swallows fly south so they can find enough food to eat during the cold, snowy winter.
3. **Do all birds fly?** Name one bird that does not fly. Not all birds fly. For example, penguins, emus, and ostriches do not fly.
4. **Are birds mammals? Why or why not?** Birds are not mammals. They have feathers, not hair or fur. Their babies hatch from eggs, rather than being born live. Female birds do not feed babies their milk.

Lesson 15 Guide: The Four Horseshoes

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly and Peter enter the blacksmith's shop. The blacksmith shoes Peter and Polly's father's horse, Mary. The blacksmith shows the children a set of rounded, metal shoes that are too small for horses. He asks the children to guess which animal will wear the shoes. Peter and Polly guess a goat and a calf, but those animals do not have round feet. The shoes are for a pony. Polly accidentally drops the horseshoes onto her uncooked egg and breaks it. The children take a ride on Mary.

Vocabulary

- **Hammer:** A tool with a handle and a metal head used to pound and pull nails, break things, and shape things.
- **Iron:** A silvery gray metal used to build things.
- **Spark:** A particle thrown from a fire or produced by striking two hard things together.
- **Horseshoes:** A shoe for a horse made from iron and secured with nails.
- **Temperature:** Temperature is a measure of how hot or cold something is. The hotter the object, the higher temperature. The colder the object, the lower the temperature.
- **Melt:** Turn from solid to liquid.
- **Melting Point:** The temperature that melts a solid into a liquid.

Concepts

In the story, Peter and Polly visit the blacksmith's shop. Blacksmiths heat metals and hammer the heated metal into shapes. Blacksmiths make many things, such as iron shoes for horses.

Facts about blacksmiths:

- Blacksmiths heat metal, such as iron, until it becomes blazing hot, starts to melt, and can be bent and shaped.
- As iron grows hotter and hotter, it glows red, then orange, then yellow, and finally white. Yellow-orange is the best color for shaping iron.
- Blacksmiths create items such as horseshoes, swords, art sculptures, fixtures for lights, and gates.

Did you know that there is a competition for blacksmiths held in Canada every year?

Blacksmiths compete in categories such as horseshoeing to be crowned 'The World Champion Blacksmith.'

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Melting Point Experiment

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Discover that different substances melt at different temperatures.

Materials: An ice cube, a pat of butter, and a penny.

Procedure:

- Review the definitions of melt, melting point, and temperature in the 'Vocabulary' section above.
- Set an ice cube, a pat of butter, and a metal penny on a plate, and put the plate in the refrigerator overnight.
- Hypothesize (guess/predict) what you think will happen to each item. Observe the results the next day. Were your hypotheses correct?
- Next, hold a penny in one hand and a small piece of butter in the other. Hold your hand over a sink to avoid making a mess.
- Hypothesize what you think will happen to each item. Observe the results in a couple of minutes. Were your hypotheses correct?

Results:

- What happened to the ice cube, butter, and penny in the refrigerator? (The ice cube melted into liquid. The butter and penny remained solid.)
- What happened to the butter and penny in your hands? (The butter melted into liquid. The penny remained solid.)

- Why did the solid ice cube turn into liquid in the refrigerator? (The refrigerator was warmer than water's melting point.)
- Why didn't the solid butter and solid penny turn into liquid in the refrigerator? (The refrigerator was colder than the butter and penny's melting points.)
- Why did the solid butter turn into liquid in your hand? (Your hand was warmer than the butter's melting point.)
- Why didn't the solid penny turn into liquid in your hand? (Your hand was cooler than the penny's melting point.)
- What would you need to do to melt the penny? (Raise the penny's temperature until it melts.)

Conclusion:

This experiment showed that different things melt at different temperatures. The ice melted in the cold fridge. The butter melted in your warm hand. The penny melts at an even higher temperature. For instance, pennies can be melted with the flame from a propane torch. Iron has an even higher melting point than pennies. Iron must be heated to even higher temperatures than pennies before melting.

Review Questions

1. **Who are the mystery horseshoes for?** The mystery horseshoes are for a pony.
2. **How many horseshoes did the blacksmith make for the pony?** The blacksmith made four horseshoes, since ponies have four hooves.
3. **What happened to Polly's egg?** Polly dropped horseshoes on the egg, and the egg broke.
4. **What did the children ride at the end of the story?** The children rode a horse.
5. **Describe what happens to iron when it is heated to extremely high temperatures.** Iron changes color when heated. First it glows red, then orange, then yellow, and finally white. It will eventually melt into a liquid.

Lesson 16 Guide: The Bonfire

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly gather leaves for their father for 1 cent per 3 loads. The children are good, honest workers. They make sure to pack the leaves tightly in baskets to give their father good value for his money. The children gather twenty-nine loads, which their father rounds up to thirty. This means Peter and Polly receive ten cents for their work, or five cents apiece. The family has a bonfire with the leaves. The children dance around the fire until bedtime.

Vocabulary

- **Load:** A large amount of something placed in a container.
- **Bonfire:** A large, outdoor fire for parties, celebrations, or burning yard waste.

Concepts

In the story, the Howe family has a bonfire with leaves. Fire is a reaction between oxygen and fuel, such as wood or gas. Fire also requires heat.

- Fire is a reaction that produces heat and light.
- Fire produces red, orange, yellow, white, and blue flames that we can see, where red is the coolest and blue is the hottest.
- Fire is very dangerous. Children should never play with fire and should only be around fires when responsible adults are present.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Colorful Fire

Color all of the colors of fire, in order, from coolest to hottest.

Objective: Reinforce that mammals have hair, lungs, and backbones.

Materials: Crayons or markers, paper.

Procedure:

- Study the image below. The colors range in order from orange-red (coolest) to blue (hottest).
- Using the image as a guide, color a flame using the correct order of colors.



Review Questions

1. **What do Peter and Polly do for their father?** Peter and Polly pack leaves in baskets for their father.
2. **Why are Peter and Polly good, honest workers?** Peter and Polly are paid for each basket of leaves that they pack. Peter and Polly pack the leaves tightly to ensure their father gets good value for his money.
3. **What does the Howe family do with all of the leaves?** The Howe family burns the leaves in a bonfire.

Lesson 17 Guide: Tim's Football

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Tim and Peter's mothers make them footballs by stuffing rags into cloth bags and sewing the bags shut. The boys kick the balls around and play in the fallen leaves. Peter wants to make a bonfire with the leaves, but Tim's father prefers that the leaves be gathered into piles so they can rot. Tim's father then uses the decayed leaves to help the plants in his garden grow. Peter and Tim have fun gathering the leaves into piles so they can bury each other in the leaves.

Vocabulary

- **Football:** A ball used in football, filled with air, either oval (American football) or round (soccer), and typically made of leather or plastic.
- **Stuffed:** Filled with something.
- **Sewed:** Joined by making stitches with a needle and thread.
- **Bonfire:** A large open-air fire.
- **Rot:** Decay through the action of bacteria or fungi.
- **Rake:** A pole with a comb-like structure that is used to draw together cut grass or leaves.

Concepts

In the story, Tim's father uses rotted leaves to help his plants grow. What is rotting?

Why do things rot?

1. When a farmer removes fruits or vegetables from their plants, they start to die immediately.
2. All living things are made of small units called cells. As the fruits and vegetables die, their cells start to break down.
3. Tiny microorganisms called bacteria, molds, and yeasts floating in the air land on the fruit and begin to further break down the fruit or vegetable.
4. Moisture (water), light, temperature, and microorganisms work together to speed the spoiling process.

How can we prevent things from rotting?

1. Keeping foods in the refrigerator slows the spoiling process (less moisture, fewer microorganisms, less light, colder temperature), but food will eventually spoil.
2. Keeping foods in the freezer at even colder temperatures slows the spoiling process even more.
3. Never eat rotten food. It might make you sick. Rotten food may smell bad, be a strange color, or have fuzzy mold spots on it.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Pee Yew! That's Rotten!

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Observe the rotting process.

Materials: Fruit, small dish.

Procedure:

- Leave a small chunk of fruit or vegetable out on the countertop in a small dish.
- Observe the dish after a few hours and draw a picture of what you see.
- Observe the dish after a day and draw a picture of what you see.
- Observe the dish each subsequent day over the next week and draw a picture of what you see.

Results:

- What changes did you observe over the week?
- How long does it take for the fruit or vegetable to rot?



Review Questions

1. **What do Peter and Tim's mothers sew for Peter and Tim?** They sew footballs.
2. **What does Peter want to do with the leaves?** Peter wants to make a bonfire with the leaves.
3. **What does Tim's father do with fallen leaves?** Tim's father piles the leaves together and lets them rot.
4. **How does Tim's father use the decayed leaves?** Tim's father uses the decayed leaves to help his plants grow in the spring.
5. **What do Peter and Tim use to cover each other?** Peter and Tim cover each other with leaves.
6. **You see a piece of fruit that has something green and fuzzy growing on it. It smells funny and has turned brown. Should you eat it?** You should not eat the fruit. It is rotten. Rotten fruit can make you sick.
7. **You would like to keep some blueberries, but will not eat them for a few weeks. Where should you store the blueberries to prevent rot?** Store the blueberries in the freezer. The blueberries would rot on the counter or in the fridge.

Lesson 18 Guide: The First Snowflakes

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

As Peter and Polly take a walk, Polly observes that ice covers the ruts in the road. A thin layer of ice also covers a puddle. As the children walk, they see their first snowflake of the fall season. The children are excited and ask their father to get out the sled. He tells them that this is only a flurry. Sledding must wait until there is a big snow.

Vocabulary

- **Rut:** A long deep track made by the repeated passage of the wheels of vehicles.
- **Ridge:** A narrow raised band running along or across a surface.
- **Sled:** A vehicle on runners that slides or is pushed over the snow.
- **Crack:** A line on the surface of something along which it has split without breaking into separate parts.
- **Snowflake:** A feathery ice crystal.
- **Flurry:** A small swirling mass of something, especially snow or leaves, moved by sudden gusts of wind.
- **Solid:** A substance that does not change its shape when placed in a container.
- **Liquid:** A substance that takes the shape of its container.
- **Gas:** A substance that takes the shape of its container and fills its entire container.

Concepts

- In the story, the children see that some of the liquid water in a puddle has changed into ice.
- In our everyday lives, we encounter matter in three states - solid, liquid, and gas.
- The state of matter depends in part on the temperature of the matter.
- At room temperature, water is a liquid.
- If liquid water becomes cold enough, it becomes ice, a solid.
- If liquid water becomes hot enough, it becomes water vapor, a gas.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: States of Matter

Objective: Investigate three of the states of matter: solid, liquid, and gas.

Materials: Ice cubes, cup, saucepan, plastic baggie.

Procedure:

Experiment 1: Frozen Water

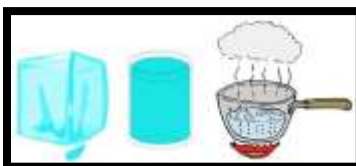
- Take a few ice cubes (frozen water) from the freezer and place them in a cup.
- Examine the frozen water and determine whether they change their shape when placed in the glass.
- Examine the frozen water and determine whether it is solid, liquid, or gas.

Experiment 2: Melted Water

- Melt the ice cubes at room temperature for a few hours, or instructors can place the ice cubes into a pan and heat them until melted. Pour the water back into the cup.
- Examine the water and determine whether the melted water changes its shape when placed in the glass.

Experiment 3: Boiled Water

- Instructors pour the water into a pan, and heat the water until it boils.
- Observe the water vapor rising from the pan as the water boils.
- (Don't do this due to the risk of burns.) If you placed a cup over the vapor, the vapor would fill the whole cup.
- Examine the water vapor and determine whether it is solid, liquid, or gas.



Review Questions

1. **In the story, what happens to the water in the puddle?** The water in the puddle has turned into ice.
2. **What do the children see floating down from the sky?** The children see snowflakes floating down from the sky.
3. **What do the children ask their father to do?** The children ask their father to get the sled.
4. **Why won't the children's father get out the sled?** The children's father tells them there is not enough snow yet for sledding.

Lesson 19 Guide: Jack Frost's Celebration

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly and their family celebrate the coming of winter. They throw Jack Frost a party. They roast apples and make popcorn in their fireplace. They eat the popcorn with salt and melted butter. Peter and Polly kiss their parents goodnight and go up to bed.

Vocabulary

- **Whistle:** A clear, high-pitched sound.
- **Celebrate:** Recognize a special or happy day or event with a party or fun activity.
- **Cellar:** A room below the ground under a house, often used for storage.
- **Kindling:** Small twigs or sticks used to start a fire.
- **Barrel:** A cylindrical container bulging out in the middle, made of long wooden planks with metal hoops around them.

Concepts

Frost consists of small white ice crystals that forms on the ground, on windows, on tree branches, or on other items when the temperature falls below freezing.

- Frost forms pretty patterns of ice crystals.
- Frost develops fractal patterns.
- If frost comes too early or too late in the season, it can damage plants and reduce the number of crops that are grown.

Jack Frost is a character who spreads cold and frost wherever he goes. Sometimes he makes mischief. Other times he does heroic things.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Poem 'Little Jack Frost. A Rhyme for Flossie' by Charles Sangster

Objective: Read the poem, then draw a picture of Little Jack Frost spreading frost.

Materials: Pencil, notebook.

Procedure:

Little Jack Frost went up the hill,
Watching the stars so cold and chill,
Watching the stars and the moon so bright,
And laughing aloud like a crazy wight.

Little Jack Frost ran down the hill,
Late in the night, when the winds were still,
Late in the fall, when the leaves fell down,
Red, and yellow, and faded brown.

Little Jack Frost walked through the trees,
'Ah,' sighed the flowers, 'we freeze, we freeze!'
'Ah,' sighed the grasses, 'we die, we die!'
Said little Jack Frost, 'Good-bye, good-bye!'

Little Jack Frost tripped round and round,
Spreading white snow on the frozen ground;

Nipping the breezes, icing the streams,
And chilling the warmth of the sun's bright
beams.

Nobody saw him, still he was there.
Nose-biting, prank-playing, everywhere;
All through the houses, out in the street,
Capering wildly through storm and sleet.

But when Dame Nature brought back the
spring,
Brought back the birds to chirp and sing.
Melted the snow and warmed the sky.
Little Jack Frost went pouting by.

The flowers opened their eyes of blue.
Green buds peeped out and grasses grew.
And it got so warm and scorched him so.
Little Jack Frost was glad to go.



Review Questions

1. **What does Peter and Polly's family celebrate?** The family celebrates the coming of winter.
2. **What are two special foods the family makes and eats for the celebration?** The family eats roasted apples and popcorn.
3. **What does Peter do before he goes upstairs for bed?** Peter kisses everyone goodnight.

Lesson 20 Guide: Taking Orders

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Tim get into a wagon and make believe they are taking food orders around their town. They pretend to take orders from Peter's mother, Mrs. Howe. Mrs. Howe pretends to order many items including a pound of cheese and a dozen peaches.

Vocabulary

- **Pound:** A unit of weight.
- **Dozen:** A group of twelve.

Concepts

In the story, Mrs. Howe orders items using terms such as 'pound' and 'dozen.' These terms help people communicate amounts or how much of something.

Facts about 'pounds:'

1. The 'number of pounds' refers to how much something weighs or how heavy something is.
2. When children visit the doctor for their yearly checkup, they step on a scale. The scale tells doctors how many pounds the children weigh.
3. When healthy babies and children grow, the number of pounds they weigh goes up over time. If the number of pounds a child weighs stays the same or goes down over an extended period, it may mean the child is not growing properly or has a health issue.

Facts about 'dozen:'

1. 'Dozen' means twelve (12) of something.
2. When people order a dozen bagels at a bakery, they will receive twelve bagels.
3. A 'baker's dozen' means thirteen (13) of something.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: A Carton of Eggs

Objective: Explore the concept of a 'dozen.'

Materials: A carton that can hold a dozen eggs, paper, and a pencil or pen.

Did you know?

- Dolphins are not fish, and neither are whales. They are mammals.
- Like many mammals, Dolphins have hair. Dolphins are born with chin hairs that fall out shortly after birth.

Procedure:

- Like donuts or bagels, eggs are often packaged by the dozen.
- If you have a carton that holds a dozen eggs, take it out of the fridge and look inside. (Instructors, if the carton is full, remove a few eggs.)
- Count the total number of spots for eggs in the carton and record the number. (To 'record' means to write the number down or type it on a computer.)
- Count the number of empty spots in the carton and record the number.
- Count the number of spots with eggs in the carton and record the number.

Calculations and Results:

- Using the numbers you recorded, calculate the total when adding the number of eggs currently in the carton and the current number of empty spots. (12)
- What can you say about the total number (filled and empty) of spots for eggs in the carton compared to the sum of the number of eggs and the number empty spots in the carton. (They are equal.)
- If one carton holds one dozen eggs, how many dozen eggs do eight cartons hold? (8)
- What number of eggs do you have if you have two dozen eggs? (24)

Review Questions

1. **What do Peter and Tim pretend to do in the story?** They pretend to drive to different houses and take orders.
2. **Which is heavier - a one pound bag of bananas or a five-pound bag of bananas?** The five-pound bag is heavier.
3. **Which is heavier - a one pound bag of feathers or a one-pound bag of nails?** Neither bag is heavier. They both weigh the same.
4. **In five years, will you weigh more or less than you do today?** You will weigh more.
5. **When you were a baby, did you weigh more or less than you do today?** You weighed less.
6. **You order twelve donuts. What is another word for 'twelve?'** 'Dozen' is another word for twelve.
7. **You order a baker's dozen of donuts. What number of donuts did you order?** You ordered thirteen donuts. A baker's dozen is equal to thirteen.
8. **You need twelve bread rolls for dinner. The man at the store says he has a dozen bread rolls left. Does the man have enough bread rolls for your dinner?** Yes, a dozen bread rolls are twelve bread rolls.

Lesson 21 Guide: Peter's Haircut

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter's hair has grown long. The blacksmith takes Peter to the barber in Large Village. The barber cuts Peter's hair very short. Peter's father is surprised by the short haircut. Peter's father is not sure whether Peter's mother will like the haircut.

Vocabulary

- **Braid:** Three or more strands of hair woven together.
- **Barber:** A person who cuts hair, especially men's.
- **Reins:** Long, narrow straps held by a horse rider or wagon/carriage driver and used to guide a horse.
- **Hair Root:** The part of hair under the skin.
- **Blood Vessels:** Blood vessels are tubes that carry blood through our bodies.

Concepts

In the story, Peter's hair has grown so long he needs a haircut. Why does our hair grow?

Facts about hair:

- Hair grows from 'roots' beneath our skin.
- Blood flowing through our bodies feeds the hair roots and makes the hair grow.
- Blood vessels carry the blood to the hair roots.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Study and Sketch Hair and Hair Roots

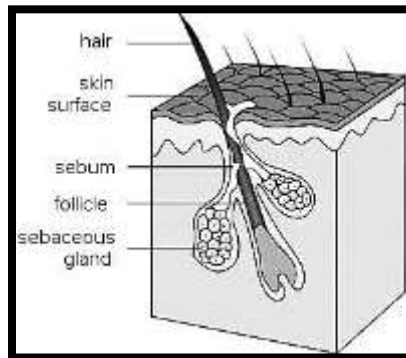
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Examine human hair. Sketch the root of a hair.

Materials: Pencil and paper.

Procedure:

- Examine another person's scalp. Look at where the hair exits the skin.
- Look for blood vessels under the scalp that carry blood to feed the hair roots.
- Use the picture below as a guide to draw a hair root. Draw a hair sprouting from the root.



Review Questions

1. **Why did Peter go to Large Village?** Peter traveled to Large Village to get a haircut.
2. **What did the barber do to Peter's hair?** The barber cut Peter's hair very short.
3. **What is a hair root?** A hair root is the part of the hair under the skin.
4. **What feeds the hair root and makes the hair grow?** Blood feeds the hair root and makes it grow.
5. **How does blood get to the hair roots?** Blood vessels carry blood to the hair roots.

Lesson 22 Guide: Comfort

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Comfort is a poem. A little girl pretends her dolls are sick and making too much noise. She becomes angry and leaves her dolls in the playroom all alone. When the little girl gets a toothache, her mother is kind to her. Her mother holds her, kisses her, and sings to her. The little girl decides the next time she pretends her dolls are sick, she will comfort them, the way her mother comforted her.

Vocabulary

- **Scamper:** Run with quick, light steps.
- **Moan:** Low sound made by a person, perhaps because they are in pain.
- **Soothed:** Gently calm.
- **Blue:** Sad or gloomy.

Concepts

Why do we get sick? Facts about sickness:

1. Sicknesses are infectious when they spread from person to person.
2. Colds and flus are sicknesses caused by viruses. Viruses are so tiny we cannot see them without special tools called microscopes.
3. Food poisoning and strep throat are sicknesses caused by bacteria. Bacteria are larger than viruses, but are also very small and cannot be seen without microscopes. Doctors may prescribe special medicine called antibiotics to combat bacteria. Antibiotics do not work against viruses.
4. We can help to prevent sickness by washing our hands, especially after using the restroom.
5. Many bacteria are helpful to people. For example, we use bacteria to turn milk into yogurt and cheese.
6. There are millions of benign (not harmful) and helpful bacteria living on your skin right now. Even more bacteria live inside you. But don't worry. These bacteria are harmless and many are even helpful.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Bacteria - They're Everywhere!

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Reinforce the concept that friendly bacteria grow inside and outside of our bodies.

Materials: Pencil, crayons or markers, and paper.

Procedure:

- Examine the picture of bacteria below. The picture shows many bacteria. It was taken using a special tool, an electron microscope. Remember, in real life, these bacteria are so tiny we can't see them with our eyes.
- Draw yourself.
- Draw bacteria in your mouth, in your stomach, on your skin, and in your hair.
- Draw tiny bacteria all over yourself, inside and out.



Review Questions

1. **At the beginning of the poem, what does the little girl do with her dolls when they get sick and cry?** The little girl leaves her dolls in the playroom all alone.
2. **What does the little girl's mother do when the little girl gets sick?** Her mother holds the little girl, kisses her, and sings to her.
3. **What does the little girl decide to do the next time her dolls get sick?** The little girl will comfort her dolls, the way her mother comforted her.

Lesson 23 Guide: The Lost Pig

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

As the blacksmith drives to Large Village, his pig falls out of the wagon. Peter, Polly, and their Father are also driving to Large Village and find the pig. As the family passes people on the road, they ask people whether they own the pig. Peter, Polly, and their Father meet the blacksmith and return the pig to him.

Vocabulary

- **Grunt:** A short, low, animal sound.
- **Pork:** The flesh of a pig eaten as food.
- **Overtook:** Catch up with and pass while traveling in the same direction.
- **Owner:** A person who possesses and controls something.

Concepts

In the story, Peter, Polly, and their Father find the blacksmith's pig. Like all living things, pigs have a specific anatomy, including an outside structure and internal workings.

Facts about a pig's external anatomy:

- Pigs have rounded, triangular ears.
- Pigs have a snout.
- Pigs have a curly tail.
- Pigs have cloven hooves, which means their hoof is split into two parts.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Mammals

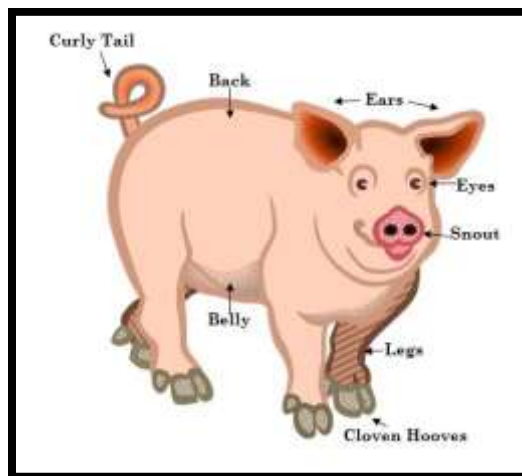
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Examine and sketch the external anatomy of a pig.

Materials: Pencil and paper.

Procedure:

- Examine the labeled picture of the pig below.
- Recite aloud the labeled parts of the pig, including the ears, eyes, snout, legs, hooves, belly, back, and tail.
- Sketch your own pig.
- If you are able, draw the arrows and names of the body parts on your pig drawing.



Review Questions

1. **What does the blacksmith lose?** The blacksmith loses his pig.
2. **What does the little pig say?** The little pig says, 'Grunt, grunt.'
3. **Why is the blacksmith taking the pig to Large Village?** The blacksmith is taking the pig to the village to sell him.
4. **Who finds the pig?** Peter, Polly, and their Father find the blacksmith's pig

Lesson 24 Guide: The Doll Family

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly shows Peter some acorns and red oak tree leaves. Then, Peter and Polly play dolls. They have a large family of dolls, a mother doll, a father doll, and eight children dolls. The dolls drink pretend acorn tea. Peter and Polly pretend that the children dolls misbehave by throwing their cups of acorn tea. Peter and Polly pretend the doll children are ill and comfort the sick dolls.

Vocabulary

- **Acorn:** The fruit of the oak, a smooth oval nut in a rough cuplike base.
- **Oak Tree:** A tree that bears acorns as fruit and typically has lobed leaves.
- **Rag Doll:** A soft doll made from pieces of cloth.
- **Tea:** A hot drink made by soaking dried leaves in boiling water.
- **Saucer:** A small, shallow dish on which a cup is placed.
- **Cross:** Annoyed or angry.

Concepts

Did you know that nuts are fruit? Nuts are the hard fruits of some plants.

Facts about nuts:

1. Types of nuts include hazelnuts, birch nuts, chestnuts, acorns, and hickory nuts.
2. Peanuts are not nuts. They are legumes, like peas and beans.
3. Coconuts, almonds, macadamia, pistachio, pecan, walnuts, and cashews are also not true nuts.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Sketch an Oak Tree

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Reinforce that oak trees grow acorns which are eaten by squirrels.

Materials: Pencil, crayons or markers, and paper.

Procedure:

- Examine the pictures of the oak tree, squirrel, and acorns below.
- Sketch an oak tree in the fall.
- Unlike the green leaves in the picture, color your trees leaves yellow, orange, and red.
- Draw nuts hanging from the tree branches and nuts on the ground around the tree.
- Draw some squirrels eating the nuts



Review Questions

1. **What type of nut does an oak tree produce?** Oak trees grow acorns.
2. **What do Peter and Polly play with in the story?** Peter and Polly play with dolls in the story.
3. **How do the doll children misbehave?** The doll children throw their cups of tea.
4. **Why do Peter and Polly comfort their dolls?** Peter and Polly comfort the dolls when the dolls become sick.

Lesson 25 Guide: Clotheshorse Tents

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly's mother helps them build tents out of two clotheshorses. Peter suggests that they might play soldiers or hunters. Polly suggests that they have a tent picnic, then decides they should instead sell lemonade. The children take four chairs and place boards over the chairs to make a counter. Peter and Polly's mother makes sandwiches and lemonade for them to sell.

Vocabulary

- **Clotheshorse:** A frame on which washed clothes are hung to dry.
- **Soldier:** A person who serves in an army.
- **Hunter:** A person or animal who pursues and kills other animals.
- **Tent:** A portable shelter often made from poles and fabric.
- **Picnic:** An outing where packed food is eaten outdoors.

Concepts

In the story, Peter and Polly sell lemonade. Lemonade is made from citrus fruits called lemons.

Facts about fruits:

- Fruits come from flowering plants.
- Fruits have seeds. Seeds can grow into plants that grow additional fruits.
- Humans and other animals use fruit as a source of food.
- Fruits help the seeds of a plant spread. Animals eat the sweet fruit, sometimes carrying it long distances within their bodies. Eventually, the animals expel the seeds in their feces. The expelled seeds can grow into new plants.
- Did you know corn kernels are considered fruits? Beans and tomatoes are also fruits.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Examine and Sketch a Fruit and its Seeds

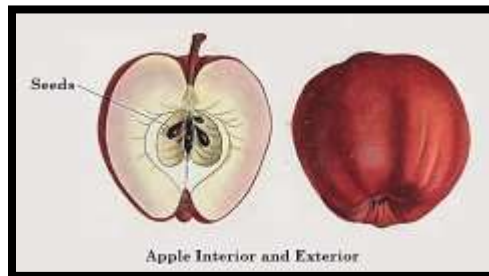
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Examine a piece of fruit. Sketch the outside and inside of the fruit, including the seeds.

Materials: A piece of fruit, such as an apple, orange, or banana. Crayons or markers and paper.

Procedure:

- Sketch the outside of your fruit.
- Cut the fruit so that the seeds are shown. (Instructors may need to do this step if the fruit cannot be cut with a butter knife.)
- Look for the seeds inside.
- Sketch the inside of the fruit, including the seeds.
- If you don't have a piece of fruit handy at home, sketch the apple and its seeds as shown below.



Review Questions

1. **Why do the children get clotheshorses from their mother?** The children get clotheshorses from their mother to make tents.
2. **What does Peter want to play with the tents?** Peter wants to play soldiers or hunters.
3. What does Polly want to play instead of soldiers or hunters? Polly first wants to have a tent picnic, but later decides to sell lemonade.
4. **Why does it help plants when animals eat their fruits?** Animals eat the fruit, carry the fruit to new locations, and expel the seeds in their waste. This helps plants move to grow in new locations.
5. **What might happen if you plant a seed in soil?** The seed may grow into a plant that will produce more seeds.

Lesson 26 Guide: The Tent Store

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly play store. They sell lemonade, sandwiches, and cookies. Peter's friend, Tim, buys a glass of lemonade for two cents. Tim buys four sandwiches for two cents. Tim's father drives by and drinks two glasses of lemonade, but insists on paying ten cents for the two glasses. He also buys four sandwiches for five cents. Peter and Polly's grandmother buys a dozen cookies for ten cents. She buys a glass of lemonade for three cents. The children decide to play circus next.

Vocabulary

- **Cent:** A monetary unit equal to 1/100th of a dollar. One penny is worth one cent.
- **Customer:** A person or organization who buys goods or services from a business.
- **Circus:** A traveling company of acrobats, trained animals, and clowns that gives performances, traditionally in a large tent.
- **Five-Cent Piece:** A coin worth five cents, also called a nickel.

Concepts

In the story, Peter and Polly exchange lemonade, sandwiches, and cookies for coins. In the US, the most common types of coins are quarters, dimes, nickels, and pennies.

Facts about coins:

- A penny is worth one cent.
- A nickel is worth five cents.
- A dime is worth ten cents.
- A quarter is worth twenty-five cents.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Play Store Like Peter and Polly

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Practice counting using money. Pretend to price, buy, and sell items.

Materials: Ten pennies per child, several toys to 'sell', paper, pencil or pen, scissors, and tape.

Procedure:

- Gather ten pennies and several toys and play store with another person.
- Decide how much each toy is worth, with an upper limit of 10 cents.
- Next, create price labels for the toys. Write the number of cents each toy is worth along with the symbol for cents (¢)
- Tape the price labels to each toy.
- Now, play store with at least one other person, where one is the cashier and the others are customers in the store. Practice buying toys with the pennies.

Review Questions

1. **What do Peter and Polly sell?** Peter and Polly sell lemonade, sandwiches, and cookies.
2. **Who are Peter and Polly's customers in the story?** Peter and Polly's customers are Tim, Tim's father, and Peter and Polly's grandmother.
3. **Who buys cookies in the story?** Peter and Polly's grandmother buys cookies.
4. **How many cents is a penny worth?** One penny is worth one cent.
5. **How many cents is a nickel worth?** One nickel is worth five cents.
6. **How many cents is a dime worth?** One dime is worth ten cents.
7. **How many cents is a quarter worth?** One quarter is worth twenty-five cents.

Lesson 27 Guide: The Circus

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter, Polly, and Tim have a circus. They form a circus ring out of sticks. They showcase animal acts featuring Tim's goat Billy, Tim's dog Collie ('the bear'), Peter and Polly's dog Wag-wag, and Peter and Polly's cats Blacky ('the black panther') and Black Baby. The children jump and tumble like acrobats. Polly dances with Collie, the dancing bear.

Vocabulary

- **Nipped:** To bite at or bite sharply.
- **Circus Ring:** A circular arena holding a circus act. A three-ring circus has three acts going on in three separate rings at one time.
- **Slat:** A thin, narrow piece of wood. Many slats may be fastened together to form a box or a fence.

Concepts

While playing circus, the children pretend Polly's cat Blacky is a fierce Black Panther. Black panthers are any of the large cats that are black. They may also be known as black leopards or black jaguars.

Facts about panthers:

1. Panthers are animals and mammals.
2. Panthers have backbones.
3. Although they are black, Panthers still have spots like spotted leopards. Panthers' spots are hidden by the black color of their fur.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Create a Circus

After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Make your own circus ring. Pretend to be a goat, a bear, and a black panther.

Materials: Paper, scissors, markers or crayons, tape or if you are able to play outside, sticks.

Procedure:

- Brainstorm how to use the materials to create your own three-ring circus. Create three rings on the floor.
- Come up with three acts for your three rings. Create a goat act, a bear act, a black panther act, an acrobat act, and/or any type of act you wish.
- Put on a special show for your family members.



Review Questions

1. **Why do the children form a circle with sticks on the ground?** The children form a circle with sticks to make a circus ring for their show.
2. **Describe some of the acts in the circus.** The children's circus has acrobatics, fierce animals, and bear dancing.
3. **Do panthers have a backbone?** Yes, panthers have a backbone.
4. **Do female panthers give birth to live babies or do they lay eggs?** Panthers are mammals. Mammals give birth to live babies.

Lesson 28 Guide: Starting for the Fair

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly is very excited because the fair is coming. On the day of the fair, Peter and Polly's mother packs a picnic to bring to the fair. The Howe family sets out in their carriage. Their horse, Mary, pulls the carriage. The fairgrounds come into sight.

Vocabulary

- **Fair:** An event featuring rides, games, food, music, and livestock, crafting, and cooking competitions.
- **Wrinkle:** A small fold in clothing or skin.
- **Luncheon:** A formal word for lunch.
- **Crowded:** A place packed with people leaving little room to move.
- **Automobile:** Another word for car.

Concepts

Peter and Polly ride to the fair in a horse-drawn carriage. The carriage's round wheels allow it to be pulled by a horse over rough roads.

Facts about wheels:

- Wheels were invented by humans around 6,000 year ago.
- Wheels reduce friction because they roll over the ground, rather than slide over the ground.
- Friction occurs when two things rub together. Friction resists the movement.
- Rub your hands together. You will feel them warm up because of friction. The harder you push your hands together, the more friction there is and the warmer your hands will get as you rub them.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Experiments with Friction

Objective: Slide or roll things over a smooth surface to explore the concept of friction.

Materials: An ice cube (melted a bit), a square block, an item that can be rolled (ball, toy car, etc.), something rough like a scouring pad or sandpaper wrapped around a sanding block, and a smooth surface.

Preliminary Instructions:

As you conduct your experiment, answer and record the results to the following questions for each of the four items:

- Does the item slide or roll?
- Is it easy or hard to slide/roll the item?

Procedure:

Find a flat, very smooth/slick surface to slide the items over, such as a flat table or desk.

Slide or roll the following over the table:

- Sanding block or scouring pad
- Square block
- Ball, car, or other rolling toy
- Melting ice cube

Conclusions:

- Which two items have the most friction when sliding or rolling across the surface (harder to move)?
- Which two items have the least friction when sliding or rolling across the surface (easier to move)?

Review Questions

1. **Where is the Howe family traveling?** The Howe family is traveling to the fair.
2. **How is the family traveling to their destination?** The Howe family travels by horse-drawn carriage.
3. **What does the family take with them on their trip?** The Howe family takes a picnic lunch.
4. **What happens to your hands when you rub them together?** When you rub your hands together, they become warm due to friction.

Lesson 29 Guide: A Bunch of Balloons

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

The family arrives at the fair and looks at the livestock, including sheep, cows, and horses. Peter and Polly receive money from their mother to buy balloons from a boy. The boy accidentally releases his balloons into the sky. The boy is sad and worries he will be punished for losing the balloons. A man in the crowd suggests the crowd chip in to pay for the balloons. The people in the crowd put money in the boy's hat and pay for the lost balloons. Polly tells her mother that the man in the crowd may have looked homely at first, but the kind way he acted made him handsome.

Vocabulary

- **Livestock:** Farm animals such as sheep, cows, and horses.
- **Piazza:** A public square or marketplace.
- **Punished:** A penalty or negative consequence.
- **Homely:** Not good looking.
- **Handsome:** Good looking.
- **Helium:** A gas that is lighter than air.

Concepts

When the boy accidentally releases his balloons in the story, the balloons float up into the air. What makes balloons float?

Facts about balloons:

1. If you blow air into a balloon with your mouth and tie it closed, the balloon will not float. It will fall to the ground because it contains air.
2. If you fill a balloon with helium gas from a tank and tie it closed, the balloon will float.
3. Helium is lighter than the air we breathe. Balloons filled with the lighter helium float in the heavier air.
4. Hot air balloons also float, but are filled with air. Hot air balloons use a flame to heat the air inside the balloon. The hot air inside the balloon is lighter than the cold air outside the balloon, enabling it to float.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Floating vs. Sinking

Objective: Hypothesize and then test which items float and which items sink.

Materials: Several objects that will not be ruined by water (silverware, plastic toys, plastic bottle caps, Legos, etc.). Instructors - help children select both items that float and items that sink.

Procedure:

- Fill a sink or bathtub with water and gather up the water-resistant items.
- Hypothesize (guess beforehand) which objects will float and which will sink.
- Based on your hypotheses, divide the items into a 'float' group and a 'sink' group.
- Drop each object into the water to test whether your hypotheses were correct.

Review Questions

1. **Which animals do Peter and Polly see at the fair?** Peter and Polly see sheep, cows, and horses at the fair.
2. **What do Peter and Polly buy at the fair?** Peter and Polly buy balloons at the fair.
3. **Why is the boy scared when he loses his balloons?** The boy is afraid he will be punished for losing the balloons.
4. **How does the homely man help the scared boy?** The homely man enlists the crowd to buy the balloons.
5. **What does 'handsome is as handsome does' mean?** People are truly handsome because of their actions, not because of their looks.

Lesson 30 Guide: The Broken Show Case

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly are at the fair. They ride on a merry-go-round, and the horses spin fast. Father tells them about his time at the fair as a boy. He leaned against a glass showcase, and the glass cracked. His father paid to replace the broken showcase.

Vocabulary

- **Showcase:** A glass case used to display items in a store or museum.
- **Merry-go-round:** A spinning machine with model horses or other animals on which people ride for fun.
- **Grandstand:** The main seating area, usually roofed, for spectators at fairs, racetracks, or sports stadiums.
- **Horse Races:** A race between two or more horses ridden by jockeys.
- **Quilt:** A bed covering of padding and fabric stitched in decorative designs.
- **Bedspread:** A decorative cloth used to cover a bed.

Concepts

Have you ever ridden a merry-go-round like Peter and Polly in the story? Merry-go-rounds move fast! If you don't hold on tight, you might fall off.

The force you apply with your hands to stay on the merry-go-round (or to keep spinning in a circle in the enrichment activity) is called centripetal force.

1. A 'force' changes the movement of an object.
2. You must apply a force to move a stationary (not moving) object.
3. You must also apply a force to stop a moving object.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Explore Forces

Objective: Experiment with different forces to change the movement of objects.

Materials: Toy that rolls (car, ball), smooth surface.

Procedure:

Experiment 1: Apply a Force to Move an Object

- Place a toy that rolls (car, ball) on a table or level, smooth surface.
- Push the toy to make it move.
- When you push the toy, you exert a force that makes the toy move.

Experiment 2: Let the Force of Friction Stop a Moving Object

- Place a toy that rolls (car, ball) on a table or level, smooth surface.
- Push the toy to make it move and let it roll without touching it.
- Watch the moving toy slow and eventually stop.
- Why did the object stop all on its own? (Force of friction.)

Experiment 3: Apply a Force to Stop a Moving Object

- Place a toy that rolls (car, ball) on a table or level, smooth surface.
- Push the toy to make it move.
- Use your hand to exert a force on the moving object to make it stop.

Experiment 4: Make Your Own Merry-Go-Round

- In a cleared, safe area, clasp both hands with another person. Facing one another, spin in a circle.
- (Don't do this!) What would happen if you suddenly let go from your partner while spinning quickly?
- The force you and your partner apply with your hands to keep your bodies moving in a circle while spinning is called centripetal force.
- This is the same force Peter and Polly applied to the merry-go-ground to keep from falling off.

Review Questions

1. **What do Peter and Polly ride at the fair?** Peter and Polly ride a merry-go-round at the fair.
2. **What is a horse race?** A horse race is a race between two or more horses ridden by jockeys.
3. **What happened when Peter and Polly's father leaned on the glass showcase?** The glass showcase broke.
4. **What keeps people from flying off moving merry-go-rounds?** The force people apply with their hands, called centripetal force, keeps people from flying off moving merry-go-rounds

Lesson 31 Guide: Blacky's Fish

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly see their cat Blacky holding a live sucker fish in her mouth. Blacky's wet fur hints that she caught the fish herself. Peter and Polly's mother cooks the fish for Blacky. Blacky eats the entire fish for dinner.

Vocabulary

- **Wise:** Someone who knows many things and makes smart decisions.
- **Gnaw:** To chew with persistence.
- **Sucker:** A fish that feeds by sucking matter up from the bottom of streams and rivers.
- **Raw:** Uncooked.

Concepts

Last chapter, we learned about mammals. In this chapter, Peter and Polly's cat Blacky catches a fish. Fish are animals but are not mammals.

Facts about fish:

- Fish live in water and breathe with the help of their gills.
- They are cold-blooded, not warm-blooded like mammals.
- They have backbones like mammals.
- They have scales, not fur or hair.
- Female fish lay eggs instead of giving birth to live babies.
- Female fish do not feed babies their milk.

Did you know that most mother and father fish do not care for their eggs or babies? However, this is not true of all fish. A few types of fish do protect their eggs and the young babies that hatch.

Enrichment Activities

Activity 1: Narrate the Story

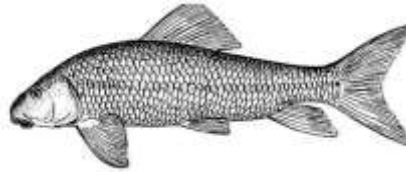
After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Act Out the Story

Objective: Reinforce the definition and behavior of a sucker fish.

Procedure:

- Pretend to be a sucker fish sucking up the matter at the bottom of a river.
- Swim in the river, wave your fins, and breathe by moving water into your mouth and out over your gills.
- You have made a cluster of eggs. Will you protect their eggs or will you let the eggs fend for themselves?



Review Questions

1. **Is Blacky a mammal or a fish?** Blacky is a Mammal.
2. **What does Blacky have in her mouth?** Blacky has a fish in her mouth.
3. **Does Blacky eat the fish raw or cooked?** Blacky eats the fish cooked.
4. **Who cooks the fish for Blacky?** The children's mother cooks the fish.
5. **Name something you might gnaw.** Apples, meat, corn on the cob - answers vary.
6. **How did the sucker fish get its name?** Sucker fish suck matter up from the bottom of streams and rivers.
7. **Are dolphins fish? Why or why not?** Dolphins are not fish, they are mammals. Unlike fish, dolphins are warm-blooded, use lungs to breathe, have backbones, and have hair. Females give birth to live babies and nurse their young.

Lesson 32 Guide: Fisherman's Luck

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

In the poem, 'Fisherman's Luck', a boy encounters a problem while fishing. He refuses to put a squirmy worm on his fishing hook. He asks the fish to bite his empty hook and promises them a worm if they do, but the fish refuse.

Vocabulary

- **Fishing Hook:** A thin, curved piece of metal that is used to catch fish.
- **Fishing Line:** A string connecting a fishing hook to a fishing pole.
- **Squirm:** To wiggle.

Concepts

The little boy in the story does not want to bait his hook with a squirmy worm.

Facts about worms:

1. They are animals, like mammals and fish.
2. They are cold-blooded like fish.
3. Worms have no bones, unlike mammals and fish.
4. They don't have fur or feathers, but some have hair or scales.
5. Worms give birth to a cocoon filled with baby worms that later hatch.
6. Like most fish, worms do not protect or care for their cocoons or babies.
7. Worms breathe through their skin. They do not have lungs like mammals or gills like fish.

Did you know there are no boy worms and no girl worms? Worms have both male and female parts, but need help from another worm to create new worms.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Going Fishing

Objective: Use problem solving skills to create fish, worms, hooks, fishing line, and fishing poles out of basic art supplies.

Materials: Crayons or markers, scissors, paper, string or dental floss, and tape.

Procedure:

- Examine the provided materials.
- Brainstorm ideas on how to create your own fish, worms, hooks, fishing poles, and fishing line out of the materials.
- After you have created your fishing items, figure out a way to simulate the fishing process.

Tips:

- Children might make fish and worms by drawing them on paper and cutting them out, hooks out of sticky tape, fishing poles by tightly rolling and taping paper, and fishing line out of string.
- To simulate fishing, children might fish over the side of a chair or couch. One person can replace the worm with a fish and tug on the line to mimic a nibble and bite. The others then reel in and catch the fish.

Review Questions

1. **What does the little boy do in the poem?** The little boy fishes with an empty hook.
2. **Does the little boy catch any fish?** No, the little boy does not catch any fish.
3. **Why doesn't the little boy catch fish?** The little boy does not bait his hook with a worm.
4. **Why doesn't the little boy like to bait the hook?** The boy feels the worms are too squirmy.
5. **Are worms mammals?** Why or why not? Worms are not mammals. Worms are not warm-blooded, they have no backbone, they have no lungs, they do not give birth to live young, and they do not nurse their babies.
6. **Are worms fish? Why or why not?** Worms are not fish. Unlike fish, worms do not have bones, live in water, breathe with gills.

Lesson 33 Guide: How Peter Catches Fish

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter's father gives Peter a fishing pole, a line, and a hook to replace his pin. Peter's father trusts Peter to go fishing alone, but cautions Peter to only fish in certain safe places. Peter falls asleep on a rock while fishing. When Peter awakens, there is a small sucker on the end of his line.

Vocabulary

- **Fishing Pole:** A long stick used for fishing, often made of wood and with no reel.
- **Pin:** A thin, straight piece of metal.
- **Bait:** Food used to catch prey, such as a worm tempting fish into biting a hook.

Concepts

In the story, Peter catches a fish. Fish are vertebrates. Vertebrates are animals that have backbones.

Facts about vertebrates:

1. Vertebrates are animals with a spine/backbone.
2. They may be either cold- or warm-blooded.
3. They might have hair, fur, feathers, or scales.
4. They have live babies or lay eggs.
5. Mammals, birds, reptiles, amphibians, and fishes are vertebrates.

Did you know humans are vertebrates? Feel your back and find the bumps of your backbone.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

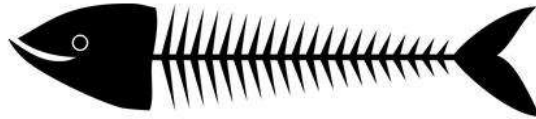
Activity 2: Vertebrates

Objective: Reinforce that vertebrates have backbones.

Materials: Crayons or markers and paper.

Procedure:

Use the picture below as a guide to draw a fish and its backbone.



Review Questions

1. **What does Peter ask his father for?** A fishing pole, a hook, some fishing line, and some worms.
2. **Does Peter catch a fish?** Yes, after he falls asleep.
3. **Is Peter a vertebrate?** Yes, humans are mammals, and mammals have backbones.
4. **Is a fish a vertebrate?** Yes, fish have backbones.
5. **Is Blacky the cat a vertebrate?** Yes, cats are mammals, and mammals have backbones.
6. **What might you use as bait to catch a mouse?** Food mice like to eat such as cheese or peanut butter.
7. **A worm has no bones. Is a worm a vertebrate?** No, all vertebrates have backbones.

Lesson 34 Guide: Polly Goes to a Wedding Part I

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly travel with their parents to attend a wedding. They ride in a carriage pulled by their horse, Mary. At the wedding site, Peter spots a building with sawdust nearby. He believes it is an ice house and hopes he will have some ice cream.

Vocabulary

- **Carriage:** A four-wheeled passenger vehicle pulled by horses.
- **Harness:** A harness is a set of straps and fittings securing a horse to a cart, carriage, plow, etc.
- **Unharness:** To remove a harness.
- **Ice House:** A building used to store ice. Ice is packed with sawdust to prevent it from melting.
- **Sawdust:** Powdery particles of wood produced by sawing.

Concepts

Horses are 'solid-hoofed plant-eating mammals with flowing manes and tails, used for riding, racing, and to carry and pull loads.'

Facts about horses:

1. They are animals, mammals, and vertebrates (they have backbones).
2. Hair covers their bodies.
3. They breathe with lungs.
4. They are warm-blooded.
5. Females give birth to live babies called colts.
6. Females feed babies their milk.

Some horses are domesticated animals. That means they live and work with humans. Humans care for and feed domesticated horses. Other horses are wild. That means they take care of themselves. They are free to go where they please. In the United States, some wild horses live on western plains. Others live on Atlantic Ocean islands.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Draw a Horse

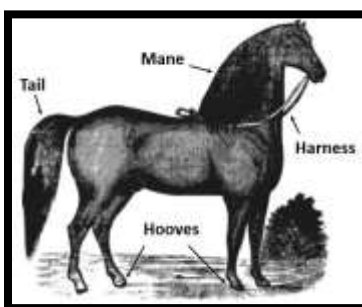
After reading or listening to the story, narrate the story events aloud using your own words.

Objective: Reinforce the definition of harness and some external parts of a horse.

Materials: Crayons or markers and paper.

Procedure:

Use the picture below as a guide to draw a horse and its harness, hooves, mane, and tail.



Review Questions

1. **Where do Peter and Polly travel to in the story?** They travel to a wedding.
2. **How do Peter and Polly get to the wedding?** They take a horse and carriage
3. **Why does the sight of sawdust excite Peter?** The building with sawdust is probably an ice house. An ice house means the wedding may offer ice cream.
4. **What might happen if Mary's harness broke while she pulls the carriage?** The horse would pull free of the carriage. The carriage would stop. They might not make it to the wedding.
5. **How is a modern freezer like an old-fashioned ice house?** They both keep things cold.
6. **Is a horse a mammal? Why or why not?** Yes, horses have backbones and lungs, they are warm-blooded, they have hair, and females give birth to live babies and feed them their milk.
7. **Is a horse a vertebrate? Why or why not?** Yes, horses have backbones.

Lesson 35 Guide: Polly Goes to a Wedding Part II

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Peter and Polly arrive at the site of the wedding and go off to explore. The children see something beyond a fence. Polly climbs the fence to investigate, and finds a pig. The pig chases Polly. While Polly flees, she splashes through a mud puddle and dirties her special wedding clothing.

Vocabulary

- **Trot:** A pace faster than a walk, but slower than a run.
- **Snout:** The mouth and nose of an animal.
- **Handsome:** Good-looking, attractive (often male).

Concepts

Pigs are mammals with hooves, hair, and snouts.

Facts about pigs:

1. They are animals, mammals, and vertebrates (backbones).
2. Pigs are 'omnivorous' which means they eat both plants and animals.
3. Females give birth to live babies called piglets.
4. Females feed babies their milk.
5. Pigs are also called 'swine.'

Did you know that some scientists believe pigs may be smarter than dogs? Some people keep pigs as pets. Many pigs love to play and have their bellies rubbed. Scientists have observed that pigs learn from one another and cooperate with one another.

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Act Out a Scene

Objective: Reinforce the events of the story.

Procedure:

- Play the roles of Polly and the pig in the story.
- Act out the pig trotting after Polly, and Polly splashing through the mud puddle.



Review Questions

1. **Why did Polly climb over the fence?** Polly wished to see what was behind the rock.
2. **Why did Polly run?** The pig trotted after her.
3. **How did Polly get dirty?** Polly ran through a muddy puddle.
4. **What is a snout?** A snout is the mouth and nose of an animal.
5. What does the saying 'Handsome is as handsome does' mean? 'Handsome is as handsome does' means how we act is more important than how we look.
6. **Is a pig a mammal?** Why or why not? Pigs are mammals. Pigs have backbones and lungs, they are warm-blooded, they have hair, females give birth to live babies, and females feed babies their milk.
7. **Is a pig a vertebrate?** Why or why not? Pigs are vertebrates. They have backbones.

Lesson 36 Guide: The Geography Lesson

Directions

Study the lesson for one week.

Over the week:

- Read the story multiple times.
- Review the synopsis.
- Study the vocabulary words.
- Learn the concepts.
- Complete the enrichment activities.
- Study the review questions.

Synopsis

Polly has a geography lesson in school. Polly and her class describe East Village, the town they live in. They talk about landforms such as valleys and mountains. They discuss the nearby Moose river. They talk about buildings such as the railroad station, the sawmill, and the post office. They discuss plant life including elm trees and maple trees. The teacher gives each student a keepsake box. The teacher tasks students to collect things related to the geography lesson in the box and to show the rest of the class a week later.

Vocabulary

- **Reader:** A book designed to give learners practice in reading.
- **Creamery:** A place where butter and cheese are produced.
- **Sawmill:** A factory that saws logs into boards.
- **Keepsake:** A small item kept in memory of someone or something.
- **Keepsake Boxes:** A special box containing keepsakes.

Concepts

In the story Polly, studies the geography of her town. How are science and geography related?

Geography is the study of the land of Earth including the arrangement and interaction of its people, resources, and landforms.

Science is the study of how the universe works through observation and experiment.

1. Geography focuses on where things are located on the Earth. Geography questions might include: Where are volcanos located on Earth? Where are towns and countries located on Earth? Where do people live on Earth?
2. Science focuses on the internal workings of things in the Universe. Science questions might include: How and why do volcanoes erupt? How do people's hearts pump blood?

Enrichment Activities

Activity 1: Narrate the Story

After reading or listening to the story, narrate the story events aloud using your own words.

Activity 2: Keepsake Box

Objective: Make your own keepsake box

Materials: Small box or plastic baggie, pencil, notebook.

Procedure:

- Go for a walk outside with your family.
- Collect any small non-trash items you see. You might collect rocks, sticks, pinecones, leaves, or acorns.
- When you return home, sketch the items.



Review Questions

1. **What subject does Polly study in school?** Polly studies geography.
2. **What subject are you studying right now?** You are studying science.
3. **What is a keepsake box?** A keepsake box is a special box containing small items in memory of someone or something.
4. **What will Polly put in her keepsake box?** Polly will add items such as plants, rocks, and other small items from around their town.