

Harvest Year



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Mathematical Practices (MP): Problem solving, reasoning and proof, communication, representation, and connections; adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition

2. Measurement and Data (MD): Describe and compare measurable attributes; classify objects and count the number of objects in categories; measure and estimate lengths indirectly and by iterating length units; tell and write time; represent and interpret data; work with money; Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects; understand concepts of area and relate area to multiplication and to addition; recognize perimeter as an attribute of plane figures and distinguish between linear and area measures; solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; and understand concepts of angle and measure angles.

Third Grade: 3.MD.3, 3.MP.1, 3.MP.4, 3.MP.6, 3.MP.7

Fourth Grade: 4.MP.1, 4.MP.4, 4.MP.5

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will construct a bar graph from the given information.
2. Students will answer questions based on information from the bar graph.

Materials needed:

- ✓ Fruit and vegetable growing/harvest season facts.
- ✓ Student Worksheet # 1 Growing Seasons
- ✓ Pencil
- ✓ Harvest Year by Cris Peterson

Terms:

Fruit - botanically, the fleshy part of the plant, usually edible, that contains the seeds

Harvest- the gathering of ripened crops

Produced - create: grow: cultivate by growing

Season- One of the four natural divisions of the year, spring, summer, fall, and winter, in the North and South Temperate zones

Tree- A perennial woody plant having a main trunk and usually a distinct crown

Vine- A weak-stemmed plant that derives its support from climbing, twining, or creeping along a surface

Vegetable- the edible roots, stems and leaves of a plant

Teaching Strategies: Either read *Harvest Year* to the students or have a student read the book to the class. Have students create a bar graph that shows Arizona growing seasons and answer questions on *Student Worksheet # 1 – Harvest Year*.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

100 Heads of Lettuce



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Number and Operations in Base Ten (NBT): Understand place value; extend counting sequences; use place value understanding and properties of operations to perform multi-digit arithmetic; and perform operations with multi-digit whole numbers and with decimals to hundredths.

2. Mathematical Practices (MP): Problem solving, reasoning and proof, communication, representation, and connections; adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition.

3. Operations and Algebraic Thinking (OA): Understand and apply properties of operations and the relationship between addition and subtraction; represent and solve problems involving multiplication and division; solve problems involving the four operations, and identify and explain patterns in arithmetic; gain familiarity with factors and multiples; generate and analyze patterns; write and interpret numerical expressions; and understand ratio concepts and use ratio reasoning to solve problems.

Kindergarten: K.OA.5, K.MP.2, K.MP.7, K.MP.8

First Grade: 1.OA.6.1.MP.2, 1.MP.7, 1.MP.8

Second Grade: 2.OA.2, 2.MP.2, 2.MP.7, 2.MP.8

Third Grade: 3.OA.7, 3.NBT.2, 3.MP.2, 3.MP.7, 2.MP.8

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will identify whole numbers through 100 in or out of order.
2. Students will identify odd and even whole numbers through 100.
3. Students will construct models to represent place value concepts for one's and ten's places.

Materials needed:

- ✓ Math Lesson 3 Student Worksheet –100 Heads of Lettuce
- ✓ Math Lesson 3 Student Worksheet- Game Markers
- ✓ Pollinating insect erasers

Terms:

No terms were identified for this lesson.

Teaching Strategies: Students will use pollinating insects that are provided (please return all) and should cut out fruits and veggies to use as their place cards. Use the teacher instruction sheet and have students cover the appropriate numbers. Use beans or other counters if the fruit pictures are too small for your grade level.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Classroom Favorites



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

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2. Measurement and Data (MD): Describe and compare measurable attributes; classify objects and count the number of objects in categories; measure and estimate lengths indirectly and by iterating length units; tell and write time; represent and interpret data; work with money; Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects; understand concepts of area and relate area to multiplication and to addition; recognize perimeter as an attribute of plane figures and distinguish between linear and area measures; solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; and understand concepts of angle and measure angles.

First Grade: 1.MD.4, 1.MP.2, 1.MP.3, 1.MP.4, 1.MP.5, 1.MP.6

Second Grade: 2.MD.10, 2.MP.1, 2.MP.2, 2.MP.4, 2.MP.5, 2.MP.6, 2.MP.7, 2.MP.8

Third Grade: 3.MD.3, 3.MP.1, 3.MP.4, 3.MP.6, 3.MP.7

Fourth Grade: 4.MP.1, 4.MP.4, 4.MP.5

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will create tally charts and pictographs.
2. Students will answer questions based on organized data.
3. Students will formulate questions to complete a classroom survey.

Materials needed:

- ✓ Math Lesson 4 Student Worksheet –Classroom Favorites

Terms:

Fruit- botanically, the fleshy part of the plant, usually edible, that contains the seeds

Vegetable- the edible roots, stems and leaves of a plant

Teaching Strategies: Have students survey their class members to determine their favorite fruit and vegetable. Students must pick their favorite from the options provided. Students will record their classmates' responses by making tallies on the included student worksheets. Students will then graph the information they obtain from the survey on a bar graph or using a pictograph and answer the student questions. Younger students can answer questions based on the pictograph worksheet.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Logic Puzzle



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Mathematical Practices (MP): Problem solving, reasoning and proof, communication, representation, and connections; adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition

First Grade: 1.MP.1

Second Grade: 2.MP.1

Third Grade: 3.MP.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Locate information from a chart.
2. Use logical thinking to answer questions.

Materials needed:

- ✓ Math Lesson 5 Student Worksheet –Logic Puzzle
- ✓ Pencil

Terms:

No terms were identified for this lesson.

Teaching Strategies: Instruct the students to apply logical thinking to solve a puzzle. Have the students complete **Math Lesson 5 Student Worksheet- Logic Puzzle**.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Fruits of Labor

(Derived from Oklahoma Ag in the Classroom)



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Mathematical Practices (MP): Problem solving, reasoning and proof, communication, representation, and connections; adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition

2. Number and Operations in Base Ten (NBT): Understand place value; extend counting sequences; use place value understanding and properties of operations to perform multi-digit arithmetic; and perform operations with multi-digit whole numbers and with decimals to hundredths

3. Operations and Algebraic Thinking (OA): Understand and apply properties of operations and the relationship between addition and subtraction; represent and solve problems involving multiplication and division; solve problems involving the four operations, and identify and explain patterns in arithmetic; gain familiarity with factors and multiples; generate and analyze patterns; write and interpret numerical expressions; and understand ratio concepts and use ratio reasoning to solve problems.

Third Grade: 3.OA.7, 3.NBT.2, 3.MP.2, 3.MP.7, 3.MP.8

Fourth Grade: 4.NBT.4, 4.NBT.6, 4.MP.2, 4.MP.3, 4.MP.4, 4.MP.5, 4.MP.7, 4.MP.8

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will be able to add and subtract whole numbers
2. Students will use employee time cards to solve mathematical equations.

Materials needed:

- ✓ Math Lesson 6 Student Worksheet –Fruits of Labor *Hourly*
- ✓ Math Lesson 6 Student Worksheet- Fruits of Labor *Piece Work*
- ✓ Pencil
- ✓ Calculator (optional)

Terms:

Employee- person who works for another person or company

Hourly Wage- The amount of money a person is paid for each hour they work

Piece Work- The amount of money a person is paid for each item they harvest

Produced - create: grow: cultivate by growing

Teaching Strategies: Talk to students about employees and wages. In agriculture there are employees that are paid by the hour and there are employees that are paid for piece work. The way an employee is paid depends upon what work they are doing. Complete **Math Lesson 6 Student Worksheet- Fruits of Labor**.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Show What You Know- Lettuce



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. **Speaking and Listening Standards (SL):** Students will demonstrate an understanding in; comprehension and collaboration, and presentation of knowledge and ideas

Second Grade: 2.SL.2

Third Grade: 3.SL.2

Fourth Grade: 4.SL.2

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will answer question from a video using grade appropriate writing components.

Materials needed:

- ✓ English Language Arts Lesson 1 Student Worksheet
- ✓ America's Heartland Episode 102 - Lettuce
- ✓ Pencil

Terms:

Produced – create: grow: cultivate by growing

Teaching Strategies: Have students discuss what they know about lettuce: how it grows, where it grows, etc. Watch the Americas Heartland DVD Episode 102. Have students work individually or as a class to answer questions on the student worksheet.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Show What You Know- Bees



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Speaking and Listening Standards (SL): Students will demonstrate an understanding in; comprehension and collaboration, and presentation of knowledge and ideas

Second Grade: 2.SL.2

Third Grade: 3.SL.2

Fourth Grade: 4.SL.2

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Student will answer questions from a video using grade appropriate writing components.

Materials needed:

- ✓ English Language Arts Lesson 2 Student Worksheet
- ✓ The Honeybee Files
- ✓ Pencil

Terms:

Drone – male bees, they do not have stingers, their only job is to mate with the queen

Produced – create: grow: cultivate by growing

Queen Bee – the largest bee in the hive and the only bee in the hive that lays eggs

Worker Bee – female bees. They have stinger, and complete all of the tasks essential for managing a hive

Teaching Strategies: Have students discuss what they know about honeybees. Is there more than one type? How does a honeybee hive run? Is there 1 bee that is in charge of the others? Watch the honeybee files DVD. As a class recall information from the video and answer questions on student worksheets.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Tops and Bottoms



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. Speaking and Listening Standards (SL): Students will demonstrate an understanding in; comprehension and collaboration, and presentation of knowledge and ideas

2. Reading Standards for Literature (RL): Students gain adequate exposure to a range of texts and tasks.

First Grade: 1.RL.1, 1.SL.1

Second Grade: 2.RL.1, 2.SL.1

Third Grade: 3.RL.1, 3.SL.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will use comprehensive strategies to comprehend text.
2. Students will sequence events from a book.

Materials needed:

- ✓ Tops and Bottoms Book
- ✓ White paper
- ✓ Crayons or markers
- ✓ Student Worksheet- Sequencing

Terms:

Flower- The reproductive structure of some seed-bearing plants, characteristically having either specialized male or female organs or both male and female organs, such as stamens and a pistil, enclosed in an outer envelope of petals and sepals

Fruit- botanically, the fleshy part of the plant, usually edible, that contains the seeds

Root- the usually underground part of a seed plant body that originates usually from the hypocotyls, functions as an organ of absorption, aeration, and food storage or as a means of anchorage and support, and differs from a stem especially in lacking nodes, buds, and leaves

Stem- A slender stalk supporting or connecting another plant part, such as a leaf or flower

Vegetable- the edible roots, stems and leaves of a plant

Teaching Strategies: Read *Tops and Bottoms* to the students. Talk about the differences between fruits and vegetables and the parts of plants. Identify from the story which vegetables grow above and below ground. Discuss other fruits and vegetables that grow above or below ground. Have students create their own *Tops and Bottoms Book*.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Student Seed Packets



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1.Language (L): Student will demonstrate an understanding in; conventions of Standard English, knowledge of language, and vocabulary acquisition and use.

2.Writing (W): Students should demonstrate an understanding in all aspects of language use; text types and purpose, production and distribution of writing, research to build and present knowledge, and range of writing.

First Grade: 1.W.2, 1.L.2

Second Grade: 2.W.2, 2.L.2

Third Grade: 3.W.2, 3.L.2

Fourth Grade: 4.W.2, 4.L.2

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will design their own seed packets.
2. Students will create their own variety of seed.
3. Students will provide information facts and instructions on the seed packet.

Materials needed:

- ✓ Seed Packet pattern
- ✓ Crayons/colored pencils/markers
- ✓ Seed pack samples

Terms:

No terms were identified for this lesson

Teaching Strategies: Show students the sample seed packets. Have students create their own variety of seed. Students will then create the directions for the planting of their new seed variety.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Fruit or Vegetable



Common Core State Standards: This lesson is correlated to the following CCSS, as well as the Arizona Additions to the CCSS.

1. **Speaking and Listening Standards (SL):** Students will demonstrate an understanding in; comprehension and collaboration, and presentation of knowledge and ideas

First Grade: 1.SL.1

Second Grade: 2.SL.1

Third Grade: 3.SL.1

Fourth Grade: 4.SL.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will compare fruits and vegetables through the use of a Venn diagram.
2. Students will complete a KWL Chart on fruits and vegetables.

Materials needed:

- ✓ Math Lesson 2 Student Worksheet –Fruit or Veggie
- ✓ Pencil
- ✓ Fruit and veggie flash cards (optional)

Terms:

Fruit- botanically, the fleshy part of the plant, usually edible, that contains the seeds

Vegetable- the edible roots, stems and leaves of a plant

Teaching Strategies: Have students complete the KWL Chart or complete as a class. Read to the class Vegetables by Gail Gibbons. Have students fill in the chart and complete the Venn Diagram.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for re-teaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Where We Grow



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Geography:** provides an understanding of the human and physical characteristics of the Earth's places and regions and how people of different cultural backgrounds interact with the environment.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

Second Grade: 4.1.6

Third Grade: 4.1.7

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will understand that goods are grown in different parts of the country.
2. Students will be able to identify states on a U.S. Map

Materials needed:

- ✓ Student Worksheet
- ✓ Student Map
- ✓ Map of the United States
- ✓ Crayons

Terms:

Fruit: botanically, the fleshy part of the plant, usually edible, that contains the seeds

Produce: create; grow; cultivate by growing

Vegetable: the edible roots, stems and leaves of a plant

Teaching Strategies: Ask students what fruits and vegetables grow in Arizona. Have students write their top five favorite fruits and vegetables on student worksheet #1. After they have identified their top five fruits and vegetables talk about other states these might be found. Talk about how weather plays a role in their location. Use the list provided and have students create a key that indicates which colors represent their favorite fruits and vegetables. Have students color in the state that is the #1 producing state for their favorite fruits and vegetables.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Apple Tree Timeline



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

First Grade: 1.1.1, 2.1.1

Second Grade: 1.1.1, 2.1.1

Third Grade: 1.1.1, 2.1.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will create a timeline of an apple tree through the seasons.
2. Students will understand what happens in an apple orchard throughout the year.

Materials needed:

- ✓ Student Worksheet # 1
- ✓ Student Information Sheet

Terms:

Dormant: temporarily inactive

Fruit: botanically, the fleshy part of the plant, usually edible, that contains the seeds

Produce: create; grow; cultivate by growing

Prune: removing branches and leaves to promote tree/plant health

Vegetable: the edible roots, stems and leaves of plants

Teaching Strategies: Go over the student information sheet with your students. Talk about how apple trees grow and are cared for throughout the year. Have the students work as a class to create a timeline of an apple tree through the seasons. Students may also use Student Worksheet #1 to complete the timeline.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Fact or Fiction



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **American History:** Students will be able to apply the lessons of American History to their lives as citizens of the United State.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

First Grade: 1.1.2, 1.1.3

Second Grade: 1.1.4, 1.1.5

Third Grade: 1.1.3, 1.1.4

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students use primary sources to study people and events.
2. Students will retell stories to describe the past based on their research.

Materials needed:

- ✓ Johnny Appleseed Book
- ✓ Johnny Appleseed Movie
- ✓ Computer / Internet

Terms:

No terms were identified for this lesson

Teaching Strategies: Read the Johnny Appleseed Book and have students watch the Johnny Appleseed Movie. Have students create a list of things they remember from the book and/or the movie. Have students research the life of John Chapman. Have students create a list of facts about John Chapman and Johnny Appleseed. Have the students compare the lists and determine what is fiction and what is fact from the legend of Johnny Appleseed. Students can do a class list identifying what is fact and fiction or they can do group presentations: one group on Johnny Appleseed and one group on John Chapman's life.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Jeopardy



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Geography:** provides an understanding of the human and physical characteristics of the Earth's places and regions and how people of different cultural backgrounds interact with the environment.
2. **Economics:** The study of economics explains historical developments and patterns, the results of trade, and the distribution of income and wealth in local, regional, national, and world economics.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

First Grade:	5.1.3
Second Grade:	5.1.6, 5.1.7
Third Grade:	4.2.1, 5.1.5

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will use the Jeopardy game to review what they have learned about fruits and vegetables.

Materials needed:

- ✓ Jeopardy Powerpoint
- ✓ Computer
- ✓ Noise makers (1 for each team)

Terms:

Fruit: botanically, the fleshy part of the plant, usually edible, that contains the seeds

Produce: create: grow: cultivate by growing

Vegetable: the edible roots, stems and leaves of a plant

Teaching Strategies: After your students have read the included books and completed some of the lessons use the Jeopardy game for review. Separate your class into teams. Bring in different noise makers for each team. When a team thinks they know the answer they can ring in. If they get the correct answer they get to pick the next category. Be sure to assign a score keeper for the class.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Sink or Float



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Inquiry Process-** establishes the basis for student's learning in science. Students use scientific processes.
2. **Physical Science-** Increase student's understanding of the characteristics of objects and materials they encounter daily.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

Kindergarten: 1.1, 1.1.3, 1.3.2, 5.1.1, 5.1.2, 5.2.1

First Grade: 1.1.1, 1.1.3, 1.2.4, 5.1.1

Second Grade: 1.1.2, 1.3.1, 1.3.2, 1.3.3

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will practice hypothesizing and predicting.
2. Students will be able to retell information.
3. Students will be able to represent information visually and interpret information.

Materials needed:

- ✓ Water
- ✓ Bucket
- ✓ Small pumpkin
- ✓ Squash
- ✓ Carrot
- ✓ Apple
- ✓ Banana
- ✓ Orange
- ✓ Peas
- ✓ Grapes
- ✓ Bell Peppers

Terms:

Float- on or below a liquid surface and not sink to the bottom

Hollow- not solid; having a space or gap or cavity

Sink- To fall or drop to a lower level, especially to go down slowly or in stages

Solid- Of definite shape and volume; not liquid or gaseous

Teaching Strategies: Have students use the student worksheet to predict which fruits and vegetables will sink and which fruits and vegetables will float. As a class, put the different items in the bucket of water one at a time. Record if the item floated or sank. Have students draw what they saw. Be sure to note which end of the item was pointing up and down. Talk to the students about why items sink or float and how items that are hollow will float. Cut into the items to determine if they are hollow or not.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Life Cycle of a Bee



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Life Science-** expands students' biological understanding of life by focusing on the characteristics of living things. The diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

First Grade: 4.1.2, 4.1.3, 4.2.2, 4.3.1

Second Grade: 4.1.1, 4.1.2, 4.2.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will understand the life cycle of a honeybee.
2. Students will be able to correctly identify the life stages of a honeybee.

Materials needed:

- ✓ Bee Life Cycle in acrylic
- ✓ Bee Study Prints (24)
- ✓ Bee Books
- ✓ Student Worksheets

Terms:

Drone- male bees, they do not have stingers, and their only job is to mate with the queen

Larva- a young (juvenile) form of animal with indirect development, going through or undergoing metamorphosis

Pupa- an insect in the inactive stage of development (when it is not feeding) intermediate between larva and adult

Queen Bee- The largest bee in the hive and the only bee in the hive that mates and lays eggs

Worker Bee- Female bees, they have stingers, and complete all of the tasks essential for managing a hive

Teaching Strategies: Read bee books to students and discuss the life cycle of a bee. Use the acrylic honeybee life stages and the honeybee prints to talk about the life cycle of a bee with your students. Have students complete the grade appropriate student worksheet.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

If I Were a Bee What Would I Be?

(Derived from Pollination Polka by Staci Disney-Walker)



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Life Science-** expands students' biological understanding of life by focusing on the characteristics of living things. The diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

Kindergarten:	4.2.1, 4.2.2, 4.2.3
First Grade:	4.1.1, 4.1.3, 4.3.1, 4.3.3
Second Grade:	4.1.1, 4.1.2, 4.2.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will identify the major parts of a honeybee.
2. Students will understand and demonstrate the roles in a beehive.

Materials needed:

- ✓ Magic Schoolbus: Inside a Beehive Book
- ✓ Honeybee Powerpoint *included in kit*
- ✓ Honeybee necklaces (24) *template included in the kit*
- ✓ Tiara
- ✓ Baby bottle
- ✓ Wisk broom
- ✓ Small water bucket
- ✓ Sheriff badge
- ✓ Hair brushes (4)
- ✓ Chef hat
- ✓ Wooden spoon
- ✓ Mixing bowl
- ✓ Drinking straws (12)
- ✓ Spray air freshener
- ✓ Honey bottle
- ✓ Paper fans (2)
- ✓ Bath towels (2)
- ✓ Craft poms (24)

Terms:

Builder Bees- constructs new cells for the honeycomb using wax from her body

Chef Bee- Helps make honey from nectar by mixing it with enzymes in her mouth

Drones- male bees, they do not have stingers, and their only job is to mate with the queen

Fanner Bees- beats her wings to help cool the hive and thicken the nectar

Food Gatherers- flies out of the hive to collect pollen and nectar from flowers

Guard Bees- stands at the entrance of the hive to chase away intruders

Honeybees – are one of the most well-known, popular and economically beneficial insects

Housekeeper Bee- cleans the cells of the honeycomb

Nurse Bees- feeds the larvae

Queen- The largest bee in the hive and the only bee in the hive that mates and lays eggs

Water Carrier Bee- leaves the hive to collect water

Worker Bees- Female bees, they have stingers, and complete all of the tasks essential for managing a hive

Teaching Strategies: Collect all the materials you will need for the lesson. Make enough copies of the bee templates for each student in your class to have a role. Read the background information and bee tasks. Assign each student in the group to a particular bee or flower role. Hand out bee necklaces and props. Have students do the Pollination Polka! When the skit is completed have the students write in their journal or on the bee template about the role they had, the tasks they had to complete, and their importance in a bee hive.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Use observations as the basis for reteaching areas where student mastery may need improvement.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Seed Sorting



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Life Science-** expands students' biological understanding of life by focusing on the characteristics of living things. The diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

Kindergarten:	1.1.1, 1.3.1, 1.3.2
First Grade:	1.1.1, 1.3.1, 1.3.2, 3.2.2, 5.1.1
Second Grade:	1.1.1, 1.3.1, 5.1.1

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will use specific tools to observe seeds.
2. Students will match seeds with their adult versions using clues.

Materials needed:

- ✓ English Language Arts Lesson 4 Student Worksheet – Seed Matching
- ✓ Seed Samples (8)
- ✓ Fruit and Vegetable pictures

Terms:

Produced – create: grow: cultivate by growing

Teaching Strategies: Discuss with your students why seeds have certain characteristics. Why some seeds are round, some brown, some striped, etc. Have your students follow the dichotomous key to figure out what plant the seed belongs to. Then have your students answer the questions on the following page.

A dichotomous key is a tool that allows you to determine the identity of items in the natural world, such as trees, flowers, mammals, reptiles, rocks and fish. The key consists of a series of choices that lead the user to the correct name of a given item. “Dichotomous” means “divided into two parts”. Therefore, dichotomous keys always give two choices in each step.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.

Garden in a Glove

(Derived from Illinois Ag in the Classroom)



Arizona State Learning Standards: This lesson is correlated to the following State Learning Standard.

1. **Life Science-** expands students' biological understanding of life by focusing on the characteristics of living things. The diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics.

Arizona State Objectives: This lesson addresses the following objectives: (Strand, Concept, Performance objective)

Kindergarten:	4.3.1, 4.3.2, 4.3.3
First Grade:	4.3.1
Second Grade:	4.3.1
Third Grade:	4.1.1, 4.3.5

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Students will understand that plants need sunlight and water to grow.
2. Students will understand the major components of fruit and vegetable plants.

Materials needed:

- ✓ Plastic food service glove
- ✓ Yarn
- ✓ Cotton balls
- ✓ Carrot seeds
- ✓ Lettuce seeds
- ✓ Tomato seeds
- ✓ Cucumber seeds
- ✓ Broccoli seeds
- ✓ Fruit and Vegetable Plant Parts

Terms:

Flower- The reproductive structure of some seed-bearing plants, characteristically having either specialized male or female organs or both male and female organs, such as stamens and a pistil, enclosed in an outer envelope of petals and sepals

Root- the usually underground part of a seed plant body that originates usually from the hypocotyls, functions as an organ of absorption, aeration, and food storage or as a means of anchorage and support, and differs from a stem especially in lacking nodes, buds, and leaves

Stem- A slender stalk supporting or connecting another plant part, such as a leaf or flower

Teaching Strategies: Collect all the materials you will need for the lesson. Talk to the students about how plants grow and the many things you can grow. Ask the students if they could have a garden what vegetables they would grow.

Evaluation: Focus the evaluation of student achievement on mastery of the objectives as stated in the lesson. A written test can also be used to assess student achievement of the objectives.