



Instructional Targets

Scientific Inquiry

- Observe and ask questions about the natural environment.
- Make simple observations and participate in simple investigations.
- Use senses to learn about the natural environment.
- Use simple tools to gather data.
- Communicate with others about observations and investigations.



Differentiated Tasks

Level 3 Students will...

- Follow steps of a scientific process related to grades K–2 science topics.

Level 2 Students will...

- Follow steps of a scientific process related to grades K–2 science topics, with support.

Level 1 Students will...

- Actively participate in a scientific process related to grades K–2 science topics.



Topic Connection

In this unit, students explore why people moved in the past. Students learn how some people moved to find land to grow crops. In this science experiment, students will observe and compare the sizes of different fruits. Then, students will explore how many seeds each piece of fruit contains. As you work through this science experiment, explain how people today grow food from seeds and that people in the past also grew food from seeds.



Topic Words



Science Words

food*
move*

need*
past

people*
present*

ask*
conclusion
data







experiment
guess
hypothesis

observe
question*
scientific process

* Power Words



Lesson at a Glance

	Activity 1	Activity 2	Activity 3	Activity 4
 Instructional Activities	Introduce the Experiment	Make a Guess / Hypothesis	Conduct the Experiment	Review and Share Findings
 See how these activities fit into the Suggested Monthly Plan .				
 ULS Materials and Resources	Picture/Word Cards  big small one few many	Experiment Steps 1 and 2	Experiment Steps 3 and 4 Picture/Word Cards  peach knife orange One Seeds, Few cherry Seeds, Many Seeds apple kiwi pumpkin	Experiment Step 5
Instructional Tools: Scientific Inquiry Processes				
 Additional Materials	Real Objects peach orange cherry apple kiwi pumpkin		Experiment Materials peach orange cherry apple kiwi pumpkin knife (for adult use only)	



Instructional Targets

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- Use senses to learn about the natural environment.



Instructional Routine



Introduce

- Introduce the activity by asking a focus question about food. For example, ask, "What is a fruit or vegetable that you like to eat?" As a class make a list of different fruits and vegetables students like to eat. Discuss how these are foods that are grown as crops. Remind students that in the past, people moved to get land to grow crops.
- Explain that people need food to eat in order to live. Then display the different fruits. Tell students they are going to make observations about different fruits. Say, "Today we are going to make observations about different fruits. Your job is to observe the fruits and put them in order from smallest to biggest."
- Review the learning goal with students: **I will observe different fruits and put them in order from smallest to biggest.**

Model

- Display each fruit. Allow students to explore each fruit using their senses. Comment aloud about each fruit. For example, display the cherry and the apple and say, "This is a cherry. This is an apple. They are both round in shape. Which one is bigger? The apple is bigger than the cherry." Continue commenting on the remaining pieces of fruit.
- Then, model placing the fruits in order from smallest in size to biggest. Comment aloud about the sizes of each fruit. For example, say, "The cherry is the smallest fruit. I will put the cherry first." Continue commenting and putting the fruit in order from smallest to biggest. Use the Picture/Word Cards to compare and comment on the sizes of each fruit.

Provide Practice

- Level 3:** Have the student participate in observing the fruit and putting the fruit in order from smallest to biggest. Encourage the student to ask questions and share observations with his or her peers.
- Level 2:** Have the student participate in observing the fruit and putting the fruit in order from smallest to biggest. Encourage the student to ask questions and share observations, using visual supports as needed. Picture/Word Cards for 'big' and 'small' are provided.
- Level 1:** Have the student participate in observing the fruit and putting the fruit in order from smallest to biggest with support. For example, display the apple and encourage the student to touch it. (Hand-over-hand assistance may be appropriate.) Have the student use his or her active participation mode to select a word that describes the apple from a field of two choices (may be errorless choice).

Review

- Revisit the learning goal. Ask, "Which fruit was the smallest? Which fruit was the biggest? Which fruit is bigger—the kiwi or the pumpkin?"



Check Understanding ?



Level 3: Can the student make and share an observation?



Level 2: Can the student make an observation?
Can the student share an observation?



Level 1: Can the student participate in making a supported observation? How?
Can the student communicate about a supported observation? How?



Instructional Targets

Scientific Inquiry

- Observe and ask questions about the natural environment.
- Communicate with others about observations and investigations.



Instructional Routine



Introduce	<ul style="list-style-type: none"> • Introduce the activity with a focus question about one of the materials explored in Activity 1. For example, ask, "What did we observe in Activity 1—sizes of fruit or the weights of coins?" Discuss students' responses. • Continue discussion by reading the "What We Know" statements on the experiment page. Compare or have students compare these statements to what they learned in Activity 1. • Tell students they will now begin an experiment. Say, "Today, your job is to ask a question and make a guess/hypothesis." • Review the learning goal with students: I will ask a question and make a guess/hypothesis.
Model	<ul style="list-style-type: none"> • Read Step 1. Emphasize that right now you can only make a guess or hypothesis about the answer to this question. Point out that the final answer will come from doing the experiment. • Read Step 2 and model making a guess/hypothesis. For example, say, "I know that different fruits are different sizes and that fruits have seeds. Since the cherry is the smallest fruit, I think the cherry will only have one seed. I will mark 'one seed' for cherry." Additionally, point out how the chart in Step 2 shows that 'one' means a single object; 'few' means 2-4 seeds, and 'many' is 5 or more seeds. • Continue modeling, showing students how you record your guess/hypothesis for each type of fruit.
Provide Practice	<p>Level 3: Have the student make a guess/hypothesis by writing or dictating what they think will happen.</p> <p>Level 2: Have the student make a guess/hypothesis, using visual supports as necessary.</p> <p>Level 1: Have the student make a guess/hypothesis by making a selection from 2 to 3 choices (may be errorless).</p>
Review	<ul style="list-style-type: none"> • Revisit the learning goal. Point out that students completed the first two steps of the scientific process—they asked a question and made a guess/hypothesis.



Check Understanding ?

- ❄ **Level 3:** Can the student make a guess/hypothesis by writing or dictating?
- ❄ **Level 2:** Can the student make a guess/hypothesis with visual support?
- ❄ **Level 1:** Can the student make a guess/hypothesis from 2 to 3 choices (may be errorless)?



Instructional Targets

Scientific Inquiry

- Make simple observations and participate in simple investigations.
- Use simple tools to gather data.



Instructional Routine



Introduce	<ul style="list-style-type: none"> • Introduce the activity with a focus question such as, "How many seeds do you think the peach will have?" Discuss students' guesses/hypotheses made in Activity 2. • Introduce the materials needed for the experiment. Picture/Word Cards are provided to support vocabulary development. • Tell students they will now complete two more steps in the scientific process. Say, "Today your job is to do an experiment and gather and record data." • Review the learning goals with students: I will do an experiment. I will gather and record data.
Model	<ul style="list-style-type: none"> • Model reading and following the directions in Step 3 to complete the experiment. • When you come to step 3 in the directions, model how to gather and record data on the chart in Step 4.
Provide Practice	<p>Level 3: Have the student participate in the experiment and independently gather and record data.</p> <p>Level 2: Have the student participate in the experiment and gather and record data with support.</p> <p>Level 1: Have the student use his or her active participation mode to participate in the experiment and in gathering and recording data.</p>
Review	<ul style="list-style-type: none"> • Revisit the learning goals by discussing the steps of the experiment, as well as what happened during the experiment. • Point out that students completed steps 3 and 4 of the scientific process—they conducted the experiment and gathered and recorded data. Explain that the next step is to review and discuss the data they gathered.



Check Understanding ?



Level 3: Can the student participate in an experiment? How?
Can the student independently gather and record data? How?



Level 2: Can the student participate in an experiment? How?
Can the student gather and record data with support?



Level 1: Can the student use his or her active participation mode to participate in an experiment?
Can the student use his or her active participation mode to participate in gathering and recording data?



Instructional Target

Scientific Inquiry

- Communicate with others about observations and investigations.



Instructional Routine



Introduce

- Introduce the activity by asking a focus question such as, "What did we do during our experiment—count seeds or eat vegetables?" Remind students that they counted seeds in different fruits. Remind students that they found out if fruits had one seed, few seeds or many seeds.
- Prompt students to recall the steps of the experiment. Say, "We watched an adult cut a piece of fruit in half. We counted the seeds in each fruit and we recorded on a chart how many seeds each fruit had. Today, your job is to look at your chart and decide if the guess/hypothesis you made in Step 2 was correct."
- Review the learning goal with students: **I will decide if my guess/hypothesis was correct.**

Model

- Display a completed data form from Step 4. Model using the data to answer the questions in Step 5.
- Discuss why the guess/hypothesis you made in Step 2 for each fruit is correct or incorrect.

Provide Practice

- Level 3:** Have the student use data from Step 4 to answer the questions in Step 5 independently.
- Level 2:** Have the student use data from Step 4 to answer the questions. Provide support as necessary.
- Level 1:** Review the data from Step 4 with the student. Then have the student answer the questions in Step 5 by selecting an answer from a single option or errorless choice.

Review

- Revisit the learning goal by discussing what happened in the experiment and by having students share their findings.
- Explain that students have now completed all five of the steps in the scientific process. Review the steps.

Extension

- To extend this lesson, have students observe and compare the number of seeds in other foods such as bell peppers, cucumbers, zucchini or melons. Or, compare 2 pieces of the same type of fruit. Have an adult cut each piece of fruit in half and compare the number of seeds each of the same fruit contained. Do the same kinds of fruit always have the same number of seeds?



Check Understanding ?

- Level 3:** Can the student use data to independently decide if a guess/hypothesis was correct?
- Level 2:** With support, can the student use data to decide if a guess/hypothesis was correct?
- Level 1:** Can the student make a selection from a single option or errorless choice to indicate if a guess/hypothesis was correct?

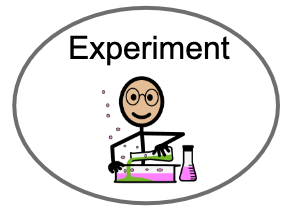


NEED



experiment

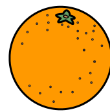
One Seed, Few Seeds, Many Seeds



peach



orange



cherry



apple



kiwi



pumpkin

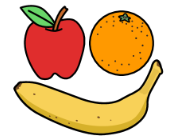


knife (for adult use only)



What We Know:

- Different fruits are different sizes.
- Fruits have seeds.



Step 1: Ask a Question







- Which fruits have one seed, few seeds and many seeds?



I think...



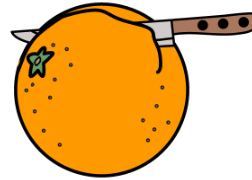
Step 2: Make a Guess / Hypothesis

	One Seed	Few Seeds (2-4)	Many Seeds (5 or more)
 peach			
 orange			
 cherry			
 apple			
 kiwi			
 pumpkin			

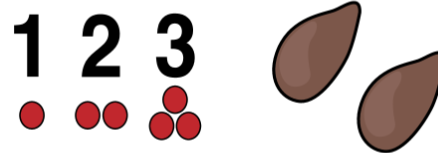


Step 3: Do an Experiment

1. Watch an adult cut one piece of fruit in half.



2. Count the seeds.

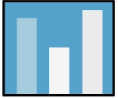


3. Record how many seeds are in each fruit on the chart.









4. Repeat steps 1 - 3 with the remaining pieces of fruit.





Step 4: Organize Data

How many seeds did the fruit have?			
 peach	1 seed	2-4 seeds	5 or more seeds
 orange	1 seed	2-4 seeds	5 or more seeds
 cherry	1 seed	2-4 seeds	5 or more seeds
 apple	1 seed	2-4 seeds	5 or more seeds
 kiwi	1 seed	2-4 seeds	5 or more seeds
 pumpkin	1 seed	2-4 seeds	5 or more seeds



Step 5: Find the Conclusion

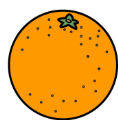
Which fruits had one seed?

1

peach



orange



cherry



apple



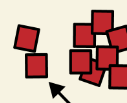
kiwi



pumpkin



Which fruits had few seeds (2-4)?



peach



orange



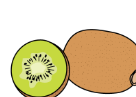
cherry



apple



kiwi



pumpkin



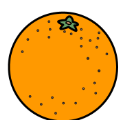
Which fruits had many (5 or more) seeds?



peach



orange



cherry



apple



kiwi



pumpkin



Were your guesses correct?



yes



no

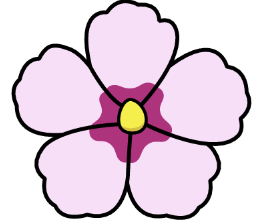




Step 5: Find the Conclusion

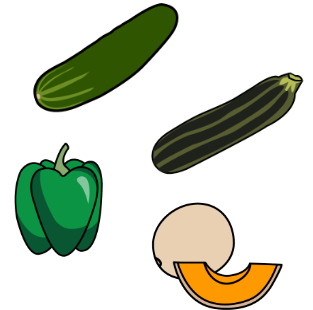
Explanation:

- Fruits are formed from a part of a plant's flower. Parts of that become the fruit's seeds. Fruits form in different ways. Different fruits use different parts of the flower or use many flowers to form the fruit. Many plants grow the part of the fruit that we eat around the seeds to protect them. Then the seeds can grow into a new plant. Because plants use different parts of flowers or many flowers to grow a fruit, the number of seeds in fruits are different.



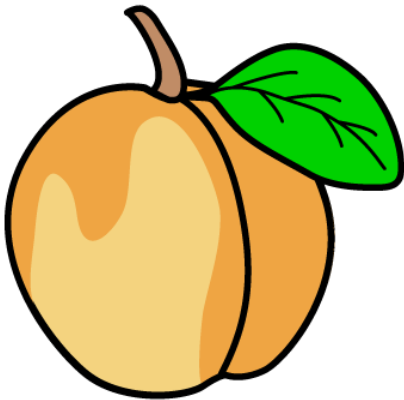
Extension:

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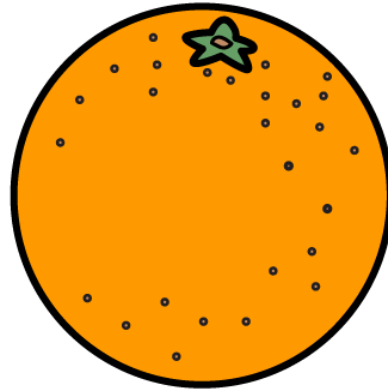




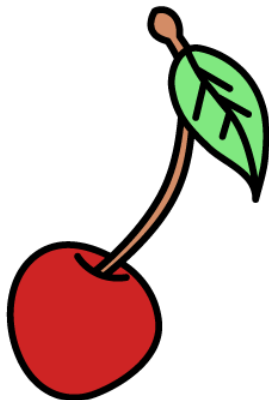
peach



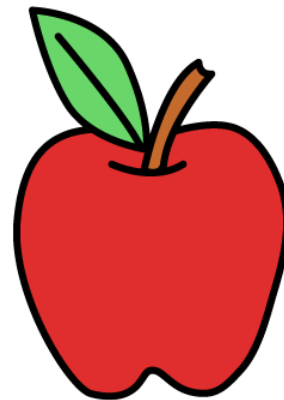
orange



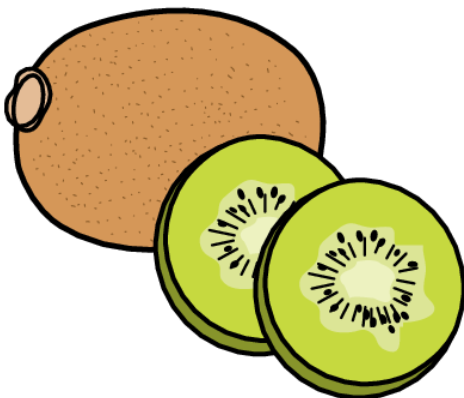
cherry



apple



kiwi

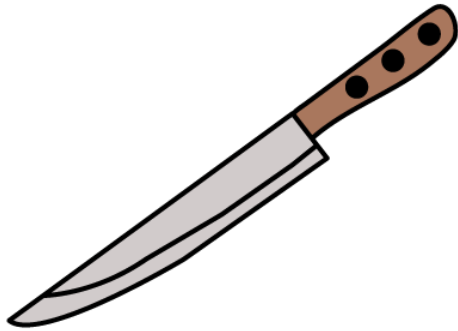


pumpkin

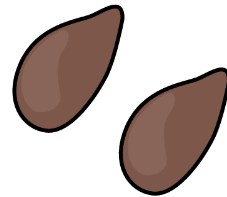




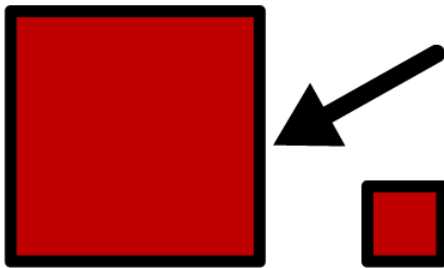
knife



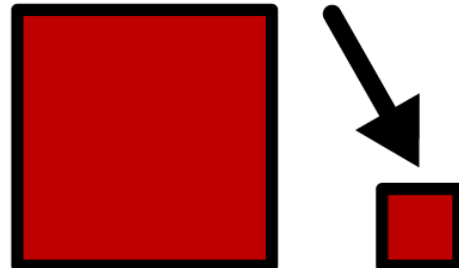
One Seed,
Few Seeds,
Many Seeds



big



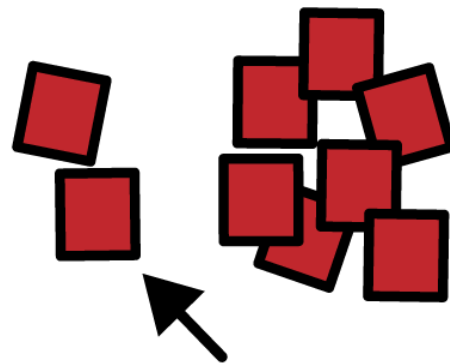
small



one

1

few





For hands-on instruction, print, cut out and laminate.

many

