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Delivering Diameters



Topic

Diameter

Key Questions

1. How big is nine-inch pizza?
2. What does the size of a pizza have to do with the diameter of a circle?

Learning Goals

Students will:

- find the diameters of several circles, and
- make connections between the diameter of a circle and real-world applications.

Guiding Documents

Project 2061 Benchmark

- *When people care about what is being counted or measured, it is important for them to say what the units are (three degrees Fahrenheit is different from three centimeters, three miles from three miles per hour).*

*NCTM Standards 2000**

- *Describe attributes and parts of two- and three-dimensional shapes*
- *Relate ideas in geometry to ideas in number and measurement*
- *Understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute*
- *Use tools to measure*

Math

Measurement

Geometry

circles

diameter

Integrated Processes

Observing

Comparing and contrasting

Drawing conclusions

Materials

Pizza rounds (see *Management 1*)

Pizza picture (see *Management 2*)

Pizza toppings pictures

Glue sticks

Scissors

Play clay

Rulers

Background Information

Third grade students are often taught that the distance across a circle through the center is called the *diameter* and that the *radius* of a circle is the distance from the center of a circle to any point on the edge of the circle. They are also taught how to measure the actual diameter and radius in centimeters, inches, etc., but seldom are they given real-world applications for those skills.

In this activity, students will explore the connection between finding the radius and diameter of a circle and a pizza. For example, when we buy a nine-inch pizza, it means that it has a diameter of nine inches. Once the center is established and more lines are cut, we can look at a slice of pizza and see that from the center point to the crust would be the radius of the pizza. The students will discover that the same ideas apply to any circle.

Management

1. Prior to teaching this lesson, gather various sized cardboard pizza rounds. Often pizza parlors will donate these or they can be purchased at warehouse type stores. Adjust the questions to whatever size pizza rounds are available.
2. Each student will need a copy of the pizza picture.

Procedure

1. Ask the class how big they think a nine-inch pizza would be.
2. Display a nine-inch pizza round. Discuss where the nine-inch measurement comes from. [its diameter]

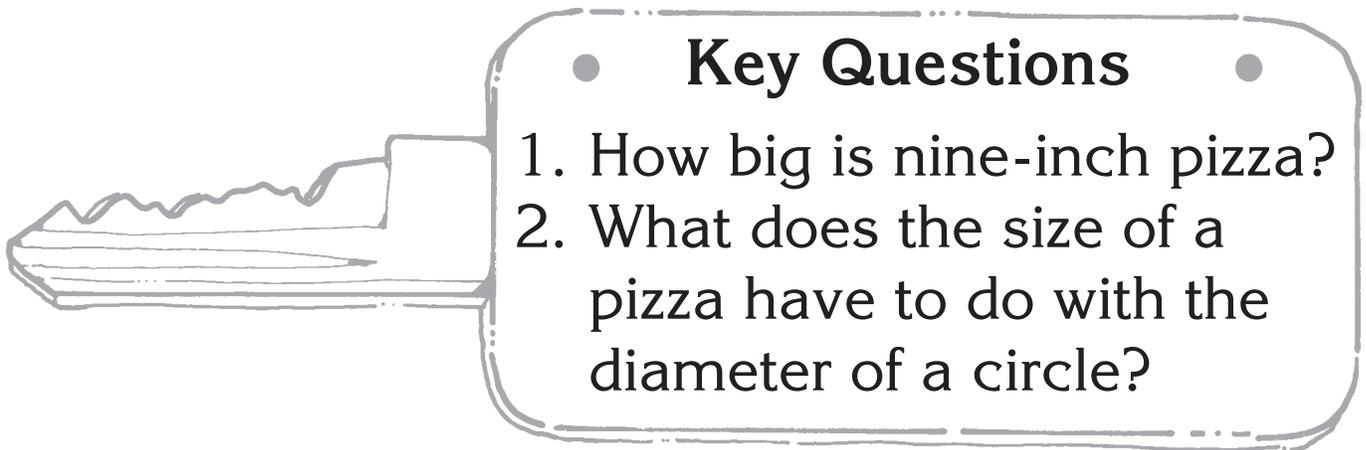
3. Locate the center of the pizza round and draw a line from one edge through the center across to the opposite edge. Invite a student to measure the line to the nearest inch. Ask the class what the measurements would be of other lines that go from edge to edge always passing through the center. [All diameters will be the same length.]
4. Give each student a copy of the pizza picture. Ask them how they would go about finding out what size pizza is on the mat. [Find the center, then measure from one edge through the center across to the opposite edge.] Distribute the rulers. Allow time for them to measure and determine the size of the pizza to the nearest whole inch.
5. Divide the class into small groups. Distribute the pizza toppings page, scissors, and glue sticks. Give each group one of the other pizza rounds. Ask students to find out what size pizza would go on their particular round based on the diameter of the cardboard circle. Ask them to identify the diameter by cutting out and gluing that many pieces of the toppings of their choice. For example, if their pizza round is eight inches, they should put eight pepperoni, eight mushrooms, etc., on it.
6. Have groups share their pizza rounds with the rest of the class, letting the others determine if the diameters of the pizzas are correctly displayed.
7. Give each student a small amount of play clay. Ask the students to make a pizza with a diameter of four inches. Walk around and ask students to prove that their pizza is truly a four-inch pizza. Repeat this procedure several times, changing the desired size of pizza each time.
8. End the lesson with a discussion about how to determine the diameter of a circle and the connection between the diameter of a circle and pizza.

Connecting Learning

1. What is the diameter of a circle? [It is a straight line that passes through the center point of a circle from one edge to the other edge.]
2. What does the diameter of a circle have to do with pizza?
3. What would the diameter of a 12-inch pizza be? How do you know this without measuring the pie?
4. Describe other real-world connections to the diameter of a circle.

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Learning Goals

Students will:

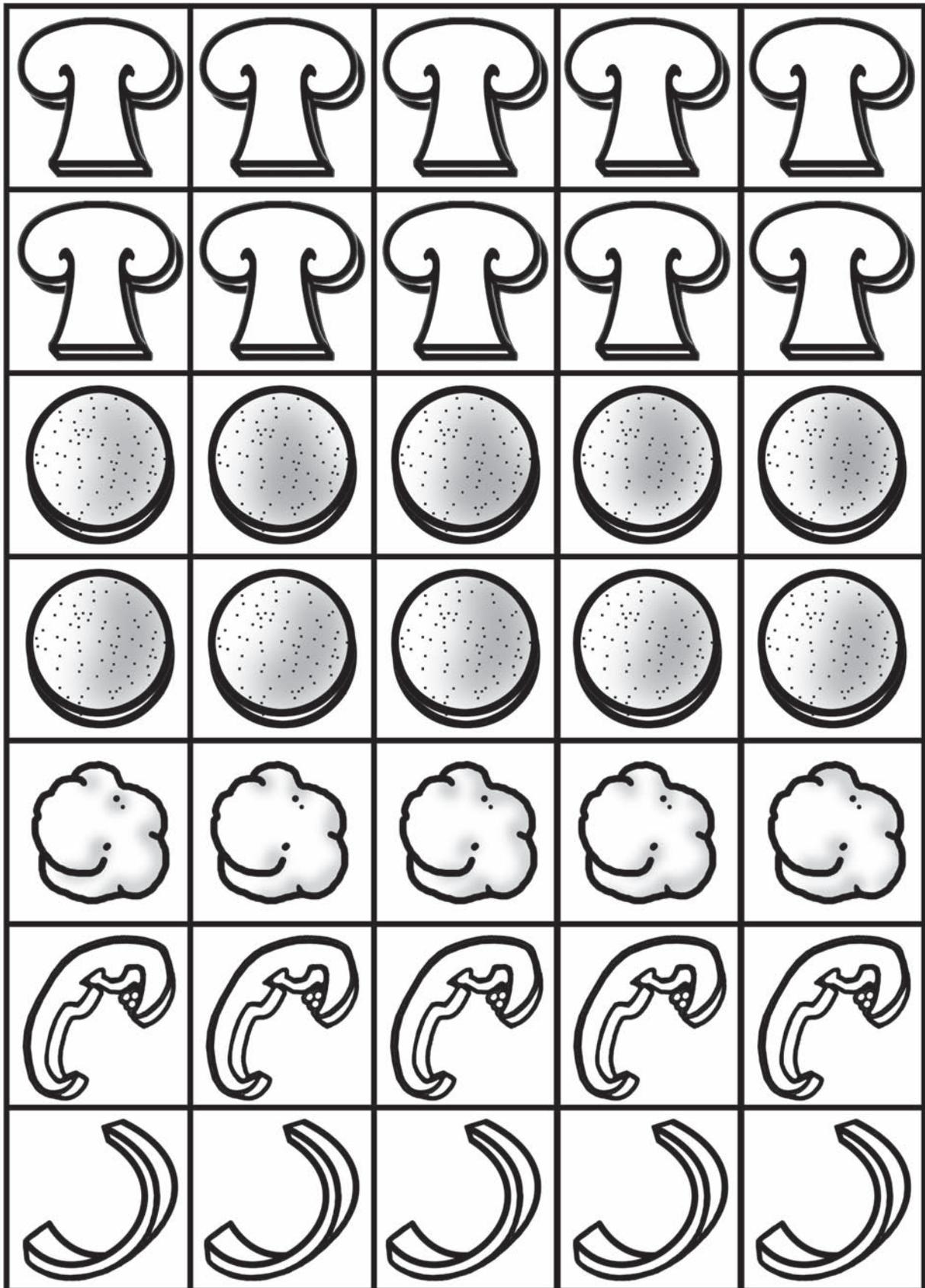
- find the diameters of several circles, and
- make connections between the diameter of a circle and real-world applications.

Delivering Diameters

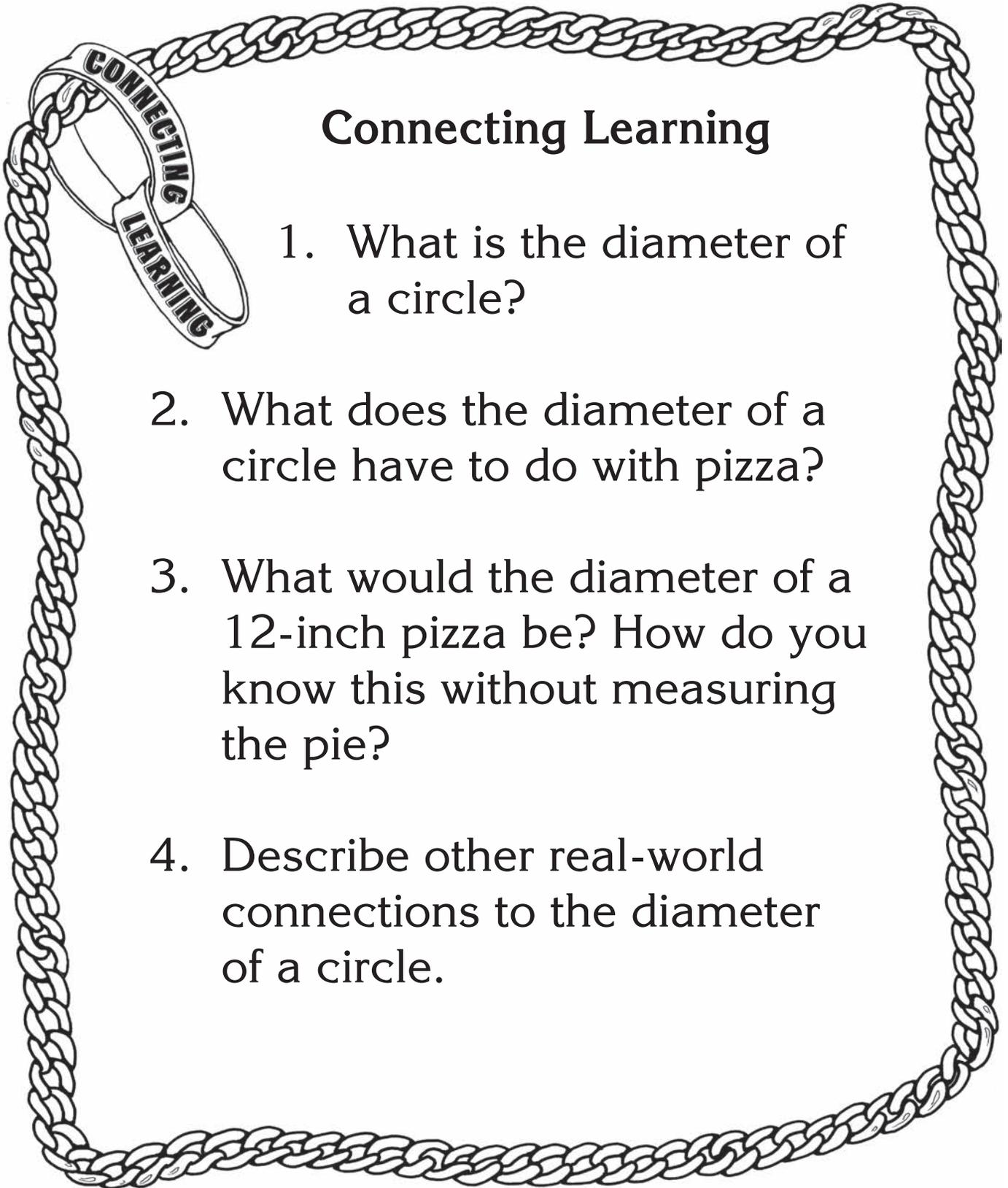
What is the size of this pizza?



Delivering Diameters



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Connecting Learning

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