



Author(s): Ben Lindeman			Lesson Title: Pumpkin Pi			
Grade Span			ICLE Application Model			
K-4	5-8 XX	9-12	A	B	C XX	D

Instructional Focus:

Measurement: Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Algebraic Concepts and Relationships: Students use algebraic methods to investigate, model and interpret patterns and functions involving numbers.

Writing: Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Performance Task

Elisha’s teacher, Ms. Whalen, brought several pumpkin pies to class. The pies have 3 different diameters. For now, let’s call them “small,” “medium,” and “large.” She told the class that they were going to investigate a very important ratio, the ratio of the circumference of a circle to the length of the diameter of the circle by measuring the circumference of each circle and its diameter. Pretend that you are a student in Ms. Whalen’s class. Your task is to measure the circumference of each size pie and its diameter using a tape measure and a ruler respectively. Measure only one pie of each size. You are to then use your calculator to find the ratio of the circumference to the measure of the diameter. In your math journal, copy the chart below and record your data in your chart. Form a group with two other members of your class and discuss your findings. Make any conclusion that you can about the ratio of the circumference of a circle to the length of its diameter? Write what you think in your journal.

Note to the teacher: You can use any kind of pie with this activity. You may want the students to actually make the pies themselves. This they might do in a cooking class, in the school kitchen, or as an assignment. If you don’t want to use actual pies, you could just have the students measure empty pie plates. You will want three different sizes of pies.

ICLE Essential Skills

Know how to measure *circle quantities* (e.g., area, angle formed by two secants, circumference, length of segments, etc.). (m30)

Perform *operations with signed* (positive and negative) *numbers*, including decimals, ratios, percents, and fractions. (m1)

Use writing as a tool for learning in formats such as learning logs, laboratory reports, note taking, journals and portfolios. (ela40)

Scoring Guide:

Rate each of the following characteristics on a 3 – 0 basis, where

- 3 = Response is clear, concise, and accurate and demonstrates a thorough understanding
- 2 = Response lacks clarity, conciseness, or accuracy and demonstrates some understanding
- 1 = Response is vague, difficult to understand, and inaccurate and demonstrates minimal understanding
- 0 = Does not attempt or response shows no understanding

Characteristic	Rating
Knowledge of circumference and diameter	_____
Accuracy of measurements	_____
Understanding of ratio	_____
Ability to use calculator to perform arithmetic operations	_____
Organization of data in chart, including neatness	_____
Quality of written response (conclusion) in journal	_____

Keywords

English Language Arts	Mathematics	Science
Reading	Algebra Irrational Numbers	Earth Science
Writing Journals	Geometry Calculators Circles Circumference	Life Science
Communications	Statistics	Chemistry
Literature	Calculus	Physics
Other	Trigonometry	Other
	Other	

PERFORMANCE TASK Chart

Pie Size	Circumference	Diameter	Ratio of Circumference to Diameter
Small			
Medium			
Large			