



If I Lived in a Tower

Introduction

Objective:

Students will decide upon necessary items that they would like to have with them if they were going to live in a tower.

Students will design a floor map of one level in a tower that they would build if they were going to live in this tower for the rest of their life. The map will include dimensions including radius, diameter, area and circumference.

Academic Content Standards:

- ❖ National Council of Teachers of Mathematics: Number, Number Sense and Operations
 - *Students understand numbers, ways of representing numbers, relationships among numbers and number systems.*
 - *Students understand the meaning of operations and how they relate to one another.*
 - *Students compute fluently and make reasonable estimates.*
- ❖ National Council of Teachers of Mathematics: Measurement
 - *Students understand measurable attributes of objects and the units, systems, and processes of measurement.*
 - *Students apply appropriate techniques, tools, and formulas to determine measurements .*
- ❖ National Council of Teachers of Mathematics: Geometry
 - *Students analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.*
 - *Students use visualization, spatial reasoning, and geometric modeling to solve problems.*
- ❖ Ohio Academic Content Standards for Mathematics: Number, Number Sense and Operations
 - *Students demonstrate number sense including an understanding of number systems and operations and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.*
 - *Benchmarks: K, L and M (4th Grade)*
 - *Benchmark: I (5th and 6th Grades)*
- ❖ Ohio Academic Content Standards for Mathematics: Measurement
 - *Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.*
 - *Benchmarks: A, B and D (4th Grade)*
 - *Benchmark: A, B, C, D, E, F and I (5th and 6th Grades)*
- ❖ Ohio Academic Content Standards for Mathematics: Geometry and Spatial Sense
 - *Students identify, classify, compare and analyze characteristics, properties and relationships of one, two, and three dimensional geometric figures and shapes. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.*
 - *Benchmarks: A and E (4th Grade)*
 - *Benchmark: B, D, E, and I (5th and 6th Grades)*
- ❖ Ohio Academic Content Standards for Social Studies #6 Mathematical Processes Standard
 - *Embedded within the grade level indicators.*

Getting Started

Materials:

- Pencils
- Colored pencils, crayons or markers
- Compass (for drawing circles)
- "If I Lived in a Castle" handout

Vocabulary:

- Circumference
- Radius
- Diameter
- Area

Lesson

Orientation Activity:

The teacher will make a class set of copies of the "If I Lived in a Castle" handout and distribute to students. Compasses and other supplies are placed in a convenient area for student use.

Learning Activity:

Students will use the "*If I Lived in a Castle*" handout and create a list of items that they feel are necessary if they lived in a round tower for the rest of their lives. Students will then estimate the amount of space that their items will occupy. Students will estimate the amount of floor space that they will need in the tower and draft a scale drawing of the floor space in the tower. To complete the task, students will use a compass to draw the circle, identify the radius, the diameter, the circumference and their lengths, identify the amount of surface area for the floor space, and draw a key to identify the scale. The chosen "necessary" items are added to the drawing, also drawn to scale.

Evaluation and Follow-Up

Assessment Tools and Methods:

Student drafted maps drawn to scale.



If I Lived in a Castle

Make a list of items that you feel would be necessary if you were going to spend the rest of your life living in a circular castle tower.

<u>Item</u>	<u>Estimated size (length x width)</u>
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____
13. _____	_____
14. _____	_____
15. _____	_____
16. _____	_____
17. _____	_____
18. _____	_____
19. _____	_____
20. _____	_____

Draw a floor map of your living space in your tower. Use a compass to draw a circle and identify the radius, diameter and circumference. Estimate the length of these three items taking in consideration all of the "necessary" things that you will be bring with you. Therefore, you decide the size of the tower. Once the size has been determined, calculate the surface area of your floor and draw all of your necessary items to scale in your living area. Use the point below as the center of your circle.

Radius = _____ Diameter = _____ Circumference = _____

Area = _____

