	center, radius, diameter, area, ratio, Π (pi)
Learning Procedures	1. Read page 3 and stop before the last sentence. Describe the mental picture that you see, such as many men on foot and knights in armor on horseback congregating on a hill overlooking the place where you are standing. Ask some students to describe the picture they see. 2. Read the story stopping at page 8 and ask some students to describe their mental images. Have all students sketch or make a picture of the new table. 3. Read through page 11 and again have students represent the newest table using the special rectangular papers. 4. Read through page 14 and ask students to quickly sketch one of the flags. 5. Read pages 16 and 17. Give students time to work with a partner to create the octagonal table from the parallelogram. Provide written or verbal clues from the diagram on page 17 if necessary. 6. Read pages 18 through 25 and have the students sketch, create with string and pencil compass or select a circle. 7. Read pages 26 through 31. Have students identify the diameter, radius and circumference of their circles at the appropriate point.
Grouping	Whole group, individuals, pairs and small group
Guided Practice	Read a passage and describe the mental images. Have students repeat the visualizations and create hard copies of their images.
Instructional Strategies	Students are asked to visualize and then create the shapes described in the story using materials.
Closure	Ask students to close their eyes and visualize an egg shape or oval and then compare that picture to that of a circle. Ask the students to give reasons for the circular table being more comfortable than the oval table. Have students label the center, radius, diameter and circumference of the circles they have created or the objects they have collected. Explain that since the Circumscribers "want only to measure the area of their kingdom," in the next lesson we will investigate ways to find the area of circles.
Independent Practice	Have students describe or write definitions that include connections between and among the terms circle, circumference, center, radius and diameter; explain the interrelations to the other terms so that others can get mental pictures or images from the descriptions.
Assessment based on Objectives (informal, formal, formative, summative – essential question)	Informal – Observe the shapes students create during the story. Check that the parts of the circle are correctly labeled. Formal – After lesson part II, have students continue the adventure in *Sir Circumference and the First Round* by writing an addendum explaining how to find the area or circumference of a circle.

Lesson Plan Title	Getting around the Circle (Visualizing, p. 59, *Beyond the Blueprint*)
Lesson Plan Created by	Charlene Tate Nichols, CSDE Educational Consultant for K-8 Mathematics
Grade	6
Subject	Mathematics
Standard(s)	**Geometry and Measurement** **3.1** Use properties and characteristics for two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. • GLE **5** Recognize the relationships among radius, diameter, circumference and area of circles and develop formulas for finding circumference and area based on these relationships
Time	Part I – 45 minutes Part IIa – 60 minutes Part IIb – 90 minutes
Indicators/Objective(s)	**Mathematics** Lesson Part I – recognize the relationships among the radius, diameter, and circumference of circles Lesson Part II – develop formulas for finding circumference and area (see links below and attached pages) **Reading** Lesson Part I – visualizing; create mental images and paper copies of geometric shapes and relationships
Required Materials for Lesson/Technology	*Sir Cumference and the First Round Table* by Cindy Neuschwander, Special rectangular pieces of paper with a length twice as long as the width (5" x 10" or 4" x 8"), regular or construction 8.5" x 11" paper, string, rulers, scissors Optional: glue, tape, compasses, square and circular geoboards, access to NCTM sites listed in resources below
Initiation (prior knowledge; connections; vocabulary)	Ask who has heard of Sir Arthur and the Knights of the Round Table. Who has read the book or seen the movie *Camelot*? Tell the students to relax because it's story time. Explain that they are to listen closely to a tale about Sir Cumference, without whom there could have been no round table! As they listen to the story, they should let their minds travel to the land of Camelot and make mental pictures of what they hear. (This is an initiation for the NCTM *Illuminations* lessons The Ratio of Circumference to Diameter and Discovering the Area Formula for Circles) Vocabulary: rectangle, square, diagonal, half, diamond shape (rhombus), parallelogram, triangle, octagon, oval, circle, cross section, circumference,

Interventions (for struggling students)	The teacher may need to cue struggling or LEP students by repeating the descriptions and gesturing.
	Geoboards may be helpful for students who have difficulty drawing or cutting.
	Provide premade shapes that correspond to some passages if necessary.
Enrichment (for gifted students)	http://illuminations.nctm.org/ActivityDetail.aspx?id=116
	Have students use the applet to investigate: How does the area of a circle compare to its radius?

Resources:

http://illuminations.nctm.org/LessonDetail.aspx?ID=U159 Lesson 1 - The Ratio of Circumference to Diameter

http://illuminations.nctm.org/LessonDetail.aspx?ID=L574