Author's Name
Cindy Neuschwander

Title of Book
Sir Cumference and the Isle of Immeter

Name of Activity
Do as you read

Materials
Sir Cumference and the Isle of Immeter Book
1in tiles (preferred - these can be found at any home improovement store or craft store) or print out the attached page of in squares on card stock for child to cut.
Files attached to this document.
Plastic circular lid from any plastic container such as margaring tubs, Panera soup containers or other flexible plastic circular lid. (see photo attached)
An orage slice (if possible!)

Before you read the book
Print out all templates of floor tile shapes (one per child or group).
Collect plastic lids (one per child or group). Pre-cut the lids as shown in hand-out.

Give the child (or group) at least 17 tiles to use.

While you read the book
As you read each page, encourage the child to make the shapes they see on each page with the tiles. Before you read the answers of how many "inners" and how many "edges" wait for the child to figure it out. Be sure to clarify what is meant by "inners" and "outers" as this is a point of confusion to many children (and adults!)

On page 10, hand out the templates for the floor tiles. Encourage child to practice area and perimeter by finding the "inners and edges" for each of the different shapes. See if they uncover the one that meets the riddle's rule as "half of many inside as out".

On page 16, hand the child the orange slice (cut in half) , and have them observe how the orange halves, put together, match the circular shape of the floor but, when the halves are pulled to make a straight rind, the triangles can fit within each other to make a rectangle. See if they can determine the relationship between the shape (and measurements of radius, circumference) of the circular orange slice and the rectangle (length and width) that it makes. Remind them that Length x Width = area of the rectangle
Note: It may be neater (although not as much fun) to have the child manipulate the plastic lid rather than the orange slice to figure out the relationships.
On page 20, give the child the printout of the circle of tiles and see if they can apply the 1/2 circumferance X radius = area rule to the circle.

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Finish reading the book.

After you read the book
Look at the plastic disks with the child and see if they can figure out what they need to do to make the circle closer and closer to a full rectangle. (Answer: The smaller you cut the triangle segments, the straighter the rim of the circle, so the more closely the length and width of the rectangle you make will match the 1/2 circumference and radius of the circular lid). This concept is a precursor to understanding calculus.

The Science, Technology, Engineering, or Math (STEM) behind the activity
Area and perimeter are two basic measurements that characterize two dimensional shapes. This book explores the relationship between rectangles and circles as students explore through challenges faced by the characters in the story. This story helps students to see how they can think about shapes and how to take a more difficult area challenge (the circle) and figure it out by relating it to a more well-known area concept (the rectangle). This concept of "straightening out" a circle to make it rectangle-like allows the student to explore this problem-solving technique and exploring this concept eases the student into the concept of how breaking the circle into smaller and smaller slices allows the edges of the rectangle to get straighter and straighter thereby approching straight edges with the width = to the radius of the circle and the length = 1/2 the circumference.

Supporting File 1 - Printable templates or additional information
- Sir-Cumference-Immeter.pdf

Supporting File 2 - Printable templates or additional information
- Sir-Cumference-and-the-Isle-of-Immeter.pdf

Supporting File 3 - Printable templates or additional information
- Sir-Cumference-Circle-to-Rectangle-1.png

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