Spaghetti and Meatballs for All!

How would you arrange the tables for the family reunion?

Topics: area, perimeter, multiplication, division, arrangement, size, addition, ratios, fractions

Spaghetti and Meatballs for All! is an amusing introduction to the concepts of perimeter and area and the relationships between perimeter and area.

Before you read *Spaghetti and Meatballs for All!* with your child:

- Look at Mrs. Comfort's seating chart. Ask your child to tell you if they think the number of people who can sit at two tables will change if the tables are pushed together. Ask them to explain why they think so.

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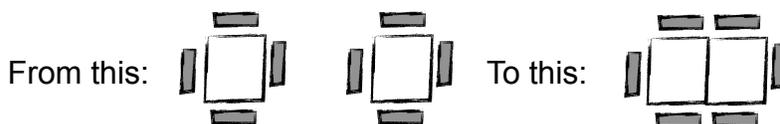
While reading the book:

- Count tables. Count chairs. Count guests. Are there enough chairs and tables for everyone. How do you know?

- Ask your child if they think Mrs. Comfort seems worried when the guests start rearranging the tables and if so, why.

When you have finished reading the story, try the following:

- Ask your child what they might have done differently if they were planning the Comfort family's party.

- Encourage your child to design four different seating arrangements for 32 people that use square tables that seat one person per side. How many tables are needed for each arrangement? Which uses the smallest number of tables? Which uses the largest number of tables?

- Figure out how much garlic bread, fresh pasta, spaghetti sauce, and meatballs each person will have assuming that everyone gets the same amount. How could you figure this out?

- Ask your child what they noticed about the final seating arrangement.

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ILLUSTRATOR:
Debbie Tilley

Mr. and Mrs. Comfort invite 32 guests to eat spaghetti and meatballs. Each new guest shows up with their own seating arrangement in mind. Will everyone find a seat?

Ages: 5 to 10 years

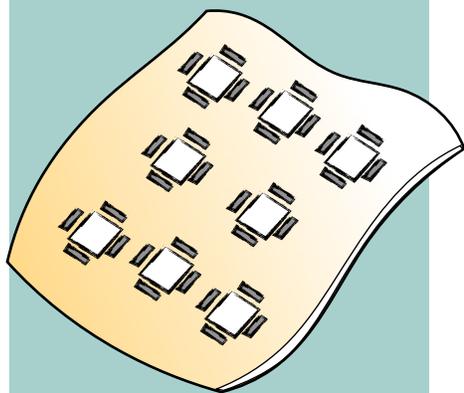**Interest Level:**
Kindergarten to Grade 5

ATOS Reading Level:
4.3

Lexile: 530L

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Questions for Mathematical Thinking:

1. Why do you think that Mrs. Comfort was upset when the tables were rearranged?

2. Mr. Comfort made 96 meatballs, how many meatballs did each person get at dinner assuming everyone got the same number?

3. If you have four family members, 2 adults and 2 children (assume each adult will eat 5 meatballs and each child will eat 3 meatballs), how many meatballs do you need to make? How did you figure it out?

4. How many square tables (like the tables in the story) would you need and how would you arrange them so everyone could sit at one large table made up of many small square tables? How else could you seat all 32 people?

5. Assuming everyone was served the same amount of food, how much spaghetti sauce, spaghetti, and bread did each person receive? Does that seem like too much, too little, or just about right?

Early Math Project Resources:

Visit Spaghetti and Meatballs for All! Activities (https://www.earlymathca.org/spaghetti-and-meatballs-for-all)

Follow this link or visit earlymathca.org/external-resources for additional online resources

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Vocabulary

Math words found in the story: altogether, divide, four, long, one, pounds, quarts, several, short, three, time, two

Related Math Words: area, dimensions, division, fractions, length, linear measurement, multiplication, perimeter, ratios, square units of measurement, width

Words to Build Reading Comprehension: banquet, boomed, budge, fret, rearranged, simmer, tending

Spanish Title: n/a

Available in: Arabic

Related Books: *A Remainder of One* by Elinor J. Pinczes; *Vincent Paints his House* by Tedd Arnold

Click this link to the World Catalog or enter https://bit.ly/43oc41M to find *Spaghetti and Meatballs for All* in the public library.

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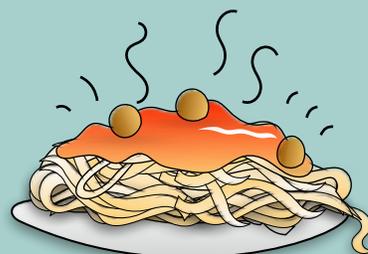
Math Connections: Use *Spaghetti and Meatballs for All!* to introduce the concepts of area and perimeter to your child. Before reading the story, talk about the meanings of area and perimeter with your child and provide several examples.

The area of an object refers to its surface measurements (the space inside the shape). For rectangles, area is measured by multiplying the length times the width. For example, a rectangle whose length is 5 inches and width is 3 inches, has an area of 15 square inches. Area is always given in square units of measurement - square miles, square feet, square meters, square centimeters, etc.

The perimeter is the total distance around the edges of the object. For example, the perimeter of the same rectangle is 5 + 3 + 5 + 3 = 16 inches. Perimeter is always given in linear units of measurement - miles, feet, meters, centimeters, etc.

Children often confuse area and perimeter. Talk about different situations when you would use a perimeter measurement, such as measuring the length of a fence or the amount of wood you would need to frame a picture. Talk about situations when you would use an area measurement, for example you would use area to determine how much carpet to buy to cover the floor of a room.

You can help your child understand these concepts with concrete examples. Measure some square and rectangular objects. For example, find the area and perimeter of a story book or a paper towel.

After reading, talk to your child about the table arrangements throughout the book. Ask if they can explain why rearranging the tables did not work. When rearranging the tables, did the total area and/or perimeter change each time or stay the same? Explore whether or not the area can stay the same if the perimeter changes? Can the perimeter stay the same if the area changes?

Encourage your child to create several designs for a garden that has an area of exactly 100 square feet. Using whole numbers (numbers without a fraction) what dimensions are possible? Which design is the longest and narrowest? What is its perimeter? Is there a 100 square foot garden that is a perfect square? What is its perimeter? Arrange the garden designs in order from smallest to largest perimeter. Talk about why some designs might work better. Assuming you needed a wooden border around the garden, which designs would cost the most to build? Why? Explore the different layouts together!

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Age Level	Related CA State Standards
Grade 1	**Operation and Algebraic Thinking 1.OA.1** Represent and solve problems involving addition and subtraction. **Geometry 1.G.1** Reason with shapes and their attributes.
Grade 2	**Operation and Algebraic Thinking 2.OA.1** Represent and solve problems involving addition and subtraction. **2.OA.3** Work with equal groups of objects to gain foundations for multiplication. **Measurement and Data 2.MD.5** Relate addition and subtraction to length. **Geometry 2.G.1** Reason with shapes and their attributes.
Grade 3	**Measurement and Data 3.MD.1** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. **3.MD.5** Geometric measurement: understand concepts of area and relate area to multiplication and to addition. **3.MD.8** Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. **Geometry 3.G.1** Reason with shapes and their attributes.