

# Foundational Inquiries:

# Spaghetti and Meatballs for all

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CL Tam

## OBJECTIVITIES AND STANDARDS

Explore the concepts of perimeter and area

## YOU NEED

- Picture Book: Spaghetti and Meatballs for All! A Mathematical Story by Marilyn Burns (Chinese Version: 義大利麵與肉丸子)
- Counters or Interlocking cubes
- Post-its or grid papers

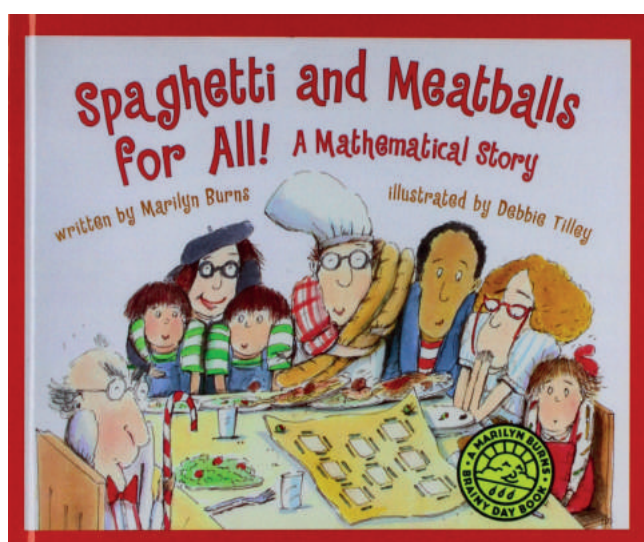
Mr. and Mrs. Comfort are holding a family reunion and have planned every detail – from the delicious spaghetti dinner to the perfect seating arrangements with enough tables and chairs for all. But when their relatives arrive, they move everything around, assuring a frantic Mr. Comfort that there will be plenty of room. Mrs. Comfort understands area and perimeter, so she knows better. Will they have enough seats? (Let's use **8 dining tables and 32 chairs** to accommodate every family member.)

## DIRECTIONS

While reading the story, try to connect students' experiences with school mathematics. Stop for discussion on occasions when new guests arrive. For example, "Just after noon, the Comfort's daughter and her husband arrived with their two children."

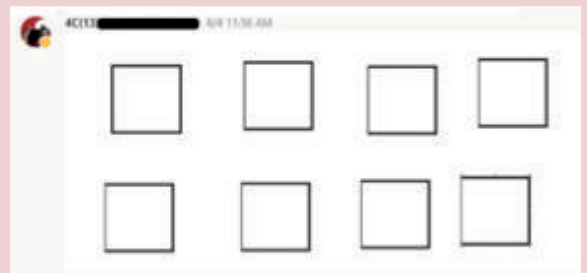
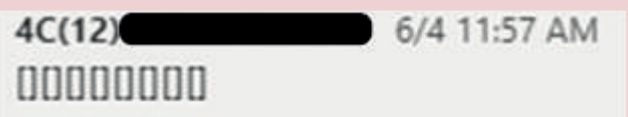
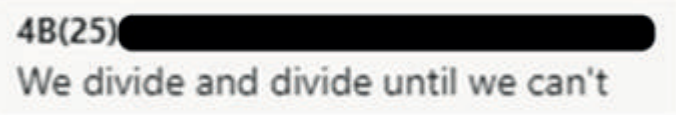
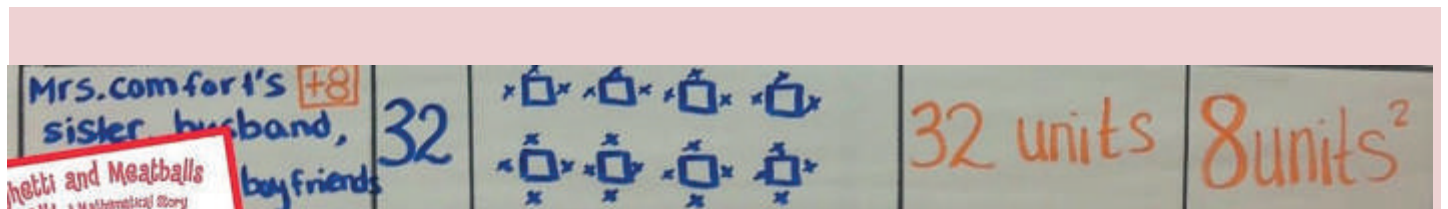
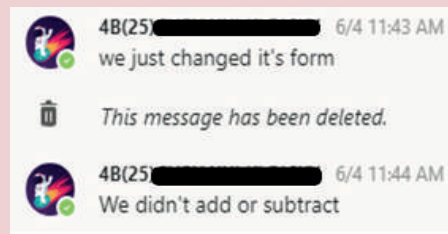
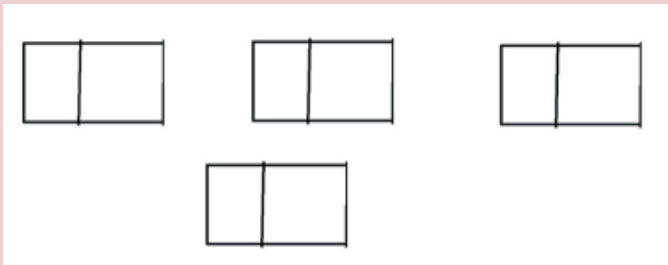
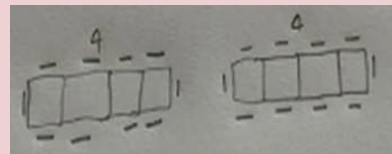
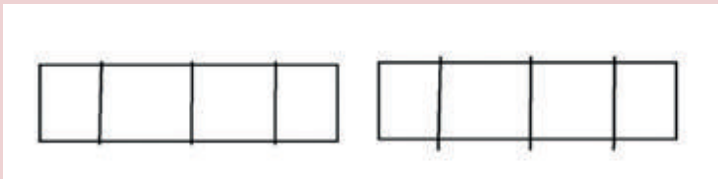
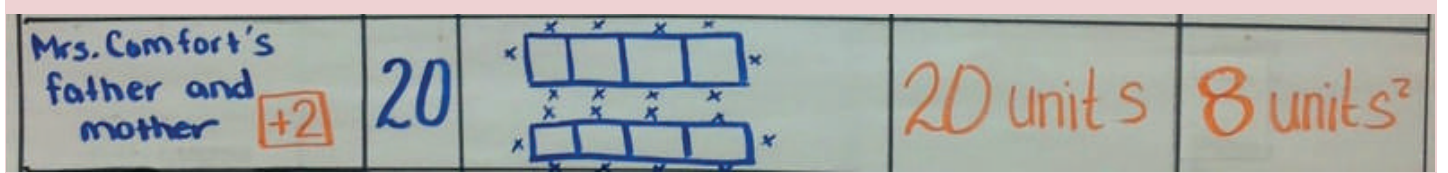
### Questions for Students

- For each arrangement, ask students how many it will seat?

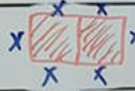
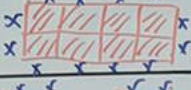
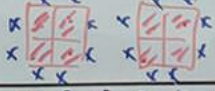
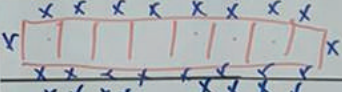


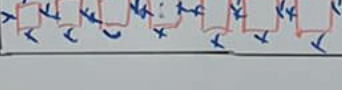




**Online storytelling** is a great way to connect students during school suspension. Stories support students' participation in online mathematical discussions, and help students express their mathematical ideas/thinking as they develop problem solving skills and learning the language



# Spaghetti & Meatballs for All

Guest Seated	No. of PPL	Table Arrangement	Perimeter	Area
Mr. & Mrs. Comfort daughter, husband + 2 children	6		6	2
Mrs. C's brother + wife, daughter + husband + twins	6		12	8
Neighbors Son + daughter	4		16	8
Mr. C's father + mother	2		18	8
Mrs. C's father + mother	2		20	8
Comfort's Son + wife twins	4		24	8
Mrs. C's Sister + husband. triplets + their boyfriends	32		32	8
3	3			

**Think aloud:** Ask students to arrange 8 dining tables to seat various numbers of guests and discuss. Which arrangement seats the most? Which arrangement seats the least? Compare the areas in each arrangement.

**Think aloud:** Ask students if it is possible to use other table shapes such as an equilateral triangle, a regular hexagon and a circle.

**Think aloud:** Ask students to arrange a family reunion for 12, 16, 24, 36 people. How many dining tables are needed? What table arrangements are the most and least economical? Find the area of each arrangement. What do they notice about the areas and perimeters of the arrangements made?

## VARIATION: EXPLORE THE CONCEPTS ABOUT RATIO

Posing problems within a meaningful context through storybooks is a way to make mathematics relevant and helps students link their knowledge to different situations. You can revisit page 5 & page 7 where Mr. Comfort is preparing the food (16 garlic bread; 8 pastas; 8 spaghetti sauce; 96 meatballs; 8 celery and olives). Ask students to discuss the multiplicative relationships between 32 and the other numbers. Ask students to fill in what they know from the story and then figure out the missing values and predict values based on the multiplicative relationships they find within the table and between the numbers.



Guests	Garlic bread (loaves)	Pasta (pounds)	Spaghetti sauce (quarts)	Meatballs	Celery & olives (plates)
1					
32					

### Questions for Students

Ask students to create their own mathematical stories based on their cultural backgrounds and experiences. Ask them to prepare a family dinner for 12, 16, 24, 36. Discuss the food items and then figure out and predict the quantities.

This provides teachers with important information about students' cultural knowledge, as well as their understanding of mathematical concepts so that teachers can clarify misconceptions, if any. It also offers opportunities for teachers to facilitate classroom discussions and create a more culturally responsive classroom.

Guests	Samosas	Momo	Aloo Gobi (kg)	Butter Chicken (kg)	Mutton Biryani (kg)
1					