

Math4020 Area/Perimeter Problems

1. Please read the book “Spaghetti and Meatballs for All” by Marilyn Burns (published by Scholastic Books) and then do the following problems based on that book.

(a) If Mrs. Comfort had rented six unit tables but didn't know how many people were coming, show at least 10 different ways she could arrange them so that everyone sits at the same table. (Each unit table must share an entire side with another unit table and each person must have a space the length of one side of the unit table to sit at, and someone must be at each “sittable” place.) Make sure you get arrangements that seat a varying number of people.

- (1) For each arrangement, tell how many it will seat.
- (2) Which arrangement seats the most and what is the most?
- (3) Which arrangement seats the least and what is the least?

(b) If Mrs. Comfort instead orders 16 chairs because she knows exactly how many people are coming, show one way she can seat her guests all at the same big table, formed by 7 unit tables, 8 unit tables, 9 unit tables, etc. up to 16 unit tables. Again, everyone must sit at the same table and each “sittable” place must have someone sitting there.

(c) What is the mathematical meaning/take-home message of the above two problems? (In other words, what is the overall mathematical conclusion from the above exercises?)

2. Suppose all four shapes, an equilateral triangle, square, a regular hexagon and a circle all have the same perimeter. Rank these shapes from the one with smallest area to the one with the largest area and explain your reasoning mathematically.

3. Suppose all four shapes, an equilateral triangle, square, a regular hexagon and a circle all have the same area. Rank these shapes from the one with the smallest perimeter to the one with the largest perimeter and explain your reasoning mathematically.