Math5900 Homework #2

Answer these questions (use a separate sheet of paper if you need more space). Make sure your work is neatly presented. Show all your work, with thorough explanations.

1. Find the 731st number in this sequence
    2, 9, 16, 23, 30, . . .

2. How many numbers are in this sequence?
    16, 27, 38, 49, . . . , 1688

3. A pad of 200 sheets of paper is approximately 15 mm thick. Suppose that one piece of this paper were folded in half, then folded in half again, then folded again and so on. If this folding process was continued until the piece of paper had been folded in half 30 times, how thick would the folded paper be?

4. Solve this cryptarithm where each letter stands for a different digit.
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    S E N D
+   M O R E
  M O N E Y
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5. Fill in each empty square so that a number in a square is the product of the two numbers beneath it.

6. An employer wants to select two people for a job from Alice, Joe, Robert, Mary and Felix. How many ways are there to do this?

7. The Smith family has 2 sons. Each son has 3 sisters. How many children are there? The Jones family has T sons. Each son has N sisters. How many children are there?

8. A 15-row auditorium seats 15 people in the first row, 16 in the second row, 17 in the third row, and so on. Use short-cuts to find the total number of seats in the auditorium.

9. Chad was the same age as Shelly, and Holly was four years older than both of them. Chad's dad was 20 when Chad was born and the average age of the four of them is 39. How old is Chad?
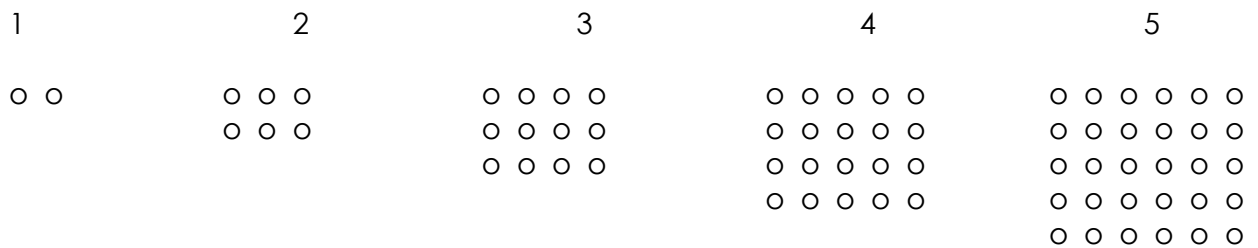
10. Find the perimeters and complete the table.

# of triangles	Perimeter
1	
2	
3	
4	
5	
6	
10	
	40
n	

11. A well is 40 ft. deep. A snail climbs up 9 feet each day and slips back 5 feet at night. How long will the snail take to reach the top of the well?

12. I took a certain two-digit number and reversed the digits. Then I added the numbers together. The sum was 121. What were the two numbers?

13. The rectangular numbers are whole numbers that are represented by certain arrays of dots. The first five rectangular numbers are shown.

1   2   3   4   5

O O   O O O   O O O O   O O O O O   O O O O O O
                 O O O   O O O O   O O O O O   O O O O O O
                                  O O O O   O O O O O   O O O O O O
                                                   O O O O O   O O O O O O
                                                                    O O O O O O

Complete the following table.

Rectangular number	# of dots
1	
2	
3	
4	
5	
6	
100	
n	