Bead Patterns

Look at the string of beads below. The beads follow a pattern but the cloud is covering part of it. How many beads are hidden behind the cloud? Of the beads that are hidden, how many beads are black? How many beads are white? Explain how you determined the pattern and found your answer.

PART I: SEARCHING FOR A SOLUTION (Due ____________________)
Discuss your solution with your mentor/partner. Explain your answer with writing, drawing, or numbers.
### PART II: SELF-EVALUATION (Due _________________)

With your mentor/partner, please monitor the number of times you find evidence of the actions below.

<table>
<thead>
<tr>
<th>#</th>
<th>Action</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>MATHEMATICAL REASONING:</strong></td>
<td>Evidence of explanation or justification in writing or through discussion</td>
</tr>
<tr>
<td></td>
<td><strong>MATHEMATICAL MODELING:</strong></td>
<td>Evidence of using pictures, tables, or graphs to represent mathematical reasoning</td>
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<tr>
<td></td>
<td><strong>MATHEMATICAL FLEXIBILITY:</strong></td>
<td>Evidence of more than one strategy to solve the problem</td>
</tr>
<tr>
<td></td>
<td><strong>MATHEMATICAL ANALYSIS:</strong></td>
<td>Evidence of recognizing or correcting errors in reasoning</td>
</tr>
</tbody>
</table>

**MENTOR/PARTNER FEEDBACK (Optional):**

**Partner's Initials:** _______

PART III: REFLECTION

Was your solution different than your original prediction? What caused you to change your answer? This section will be completed in class when we present solutions at the end of the week.
PART IV: MENTAL PATTERN PRACTICE (Due __________________)
Select one section (mild, medium or spicy) to complete.

MILD – SKIP COUNTING

1. Count by 5’s
   2, 5, 8, __, __, __, __, __, __, __, __, __

2. Count by 5’s
   5, 10, 15, __, __, __, __, __, __, __, __, __

3. Count by 10’s
   10, 20, 30, __, __, __, __, __, __, __, __, __

4. Count by 10’s
   26, 36, 46, __, __, __, __, __, __, __, __, __

5. Count by 20’s
   14, 34, 54, __, __, __, __, __, __, __, __, __

6. Count by 8’s
   8, 16, 24, __, __, __, __, __, __, __, __, __

7. Count by 11’s
   10, 21, 32, __, __, __, __, __, __, __, __, __

8. Count by 4’s
   14, 18, 22, __, __, __, __, __, __, __, __, __

9. Count by 99’s
   99, 198, 297, __, __, __, __, __, __, __, __, __

10. Count by 100’s
    32, 132, 232, __, __, __, __, __, __, __, __, __

11. Count backwards by 2’s
    90, 88, 86, __, __, __, __, __, __, __, __, __
12. Count backwards by 3's
60, 57, 54, ___________

13. Count backwards by 5's
120, 115, 110, ___________

14. Count backwards by 10's
178, 168, 158, ___________

15. Count backwards by 25's
325, 300, 275, ___________

16. Count backwards by 50's
800, 750, 700, ___________

17. Count backwards by 9's
180, 171, 162, ___________

18. Count backwards by 20's
408, 388, 368, ___________

19. Count backwards by 100's
1300, 1200, 1100, ___________

20. Count backwards by 99's
1300, 1201, 1102, ___________

MEDIUM—COUNTING BY DECIMALS

1. 0.3, 0.5, ___________

2. 0.4, 1.7, ___________

3. 0.5, 1.9, ___________

4. 0.6, 4.0, ___________

5. 0.7, 6.6, ___________
6. 0.8, 5.1, __________

7. 0.9, 3.0, __________

8. 7.0, 6.7, __________

9. 4.7, 4.0, __________

10. 9.3, 8.8, __________

11. 8.7, 8.1, __________

12. 15.3, 14.6, __________

13. 20.5, 19.7, __________

14. 19.1, 18.2, __________

15. 28.7, 27.7, __________

**SPICY - GEOMETRIC PATTERNS**

Building planners are designing a new condominium. They are not sure yet how tall they want the building to be. How many cubes are needed to build this 6-high model of Clearview Condos? How many cubes would be needed to build a 12-high model? How many cubes would be needed to build a model of any height? Explain your answer.
PART V: EXTENSION (Optional, Due ____________________)

King Arthur wanted to decide who was most fit to marry his daughter. He chose the following method. When all his knights were seated at the Round Table, he entered the room, point to one knight, and said, “You live.” The next knight wasn’t so fortunate. “You die,” said King Arthur. To the third knight, he said, “You live,” and to the fourth, he said, “You die.” He continued going around the circle, chopping off the head of every other knight, until just one was left. The remaining knight got to marry the daughter, but as the legend goes, he was never quite the same again.

Figure out where you should sit in order to live. Do this for different numbers of knights. Find a pattern so you can predict where to sit no matter how many people are seated in the circle.

Partner’s Initials: _______