

Instructions:

- The test opened at 10:00am on April 20th and is due by 11:59 on April 23rd.
- You may use any resources you like.
- This is an oral test. You are to create a video of yourself explaining the solutions to the questions below.
- Your solutions should be rehearsed and concise. The total length of the video should be no more than 6 minutes.
- Your solutions should explain what you're thinking and use appropriate visual aids.

Problems:

1. Convert the sentence “ xy is lucky whenever both x is lucky and y is lucky” into mathematical symbolism.
2. Let A , B , and C be sets. Explain the meaning of $(A \cap B) \cup C$.
3. Use mathematical induction to show that $\sum_{j=1}^n j = \frac{n(n+1)}{2}$