Set 1

Problem 1. What is $1-2+3-4+5-6+7-8+\cdots+19-20$?

Problem 2. What is the area of a triangle with side lengths 5, 12, and 13?

Problem 3. How many numbers are between 505 and 700, inclusive?

Problem 4. What is the greatest common factor of 117 and 156?

Time limit: 15 minutes.

Set 2

Problem 5. It takes Marbury 1 hour to deliver 6 letters and Madison 3 hours to deliver 60 letters. How many letters can they deliver in an 8 hour work day?

Problem 6. In quadrilateral $ABCD$, $\angle DAC = 75^\circ$, $\angle ACB = 40^\circ$, $\angle DBC = 75^\circ$, and $\angle BDC = 25^\circ$. Find the measure of angle $\angle DCA$.

Problem 7. What are the sum of the factors of 16?

Problem 8. There are 100 people in math team. If 53 of them do cross country, 27 of them do art club, and 38 of them do neither, how many do both?

Time limit: 15 minutes.

Set 3

Problem 9. In a round robin tournament, everyone competes against everyone else. If there are 8 teams, how many matches are there?

Problem 10. If I roll three die, what is the probability the numbers on the three die sum to 16?

Problem 11. I have a rectangle with perimeter 36. What is the maximum possible area of the rectangle?

Problem 12. Let $20ABC16$ be a perfect square, with A, B, and C as digits. What is the three-digit number ABC?

Time limit: 15 minutes.