Remember you are competing as a team. Work together rather than divide up the questions.

Total possible points: 82   (point values can be seen in parenthesis next to each problem)

1. (5) Joy was excited when she was able to solve one of the mathematics challenge problems from her teacher. She decided to see if her older brother could solve the problem.
    She explained, "There are nine containers which are identical and which contain prizes. Eight of the containers have exactly the same prize in them, but the other one has a special prize. The only difference which you will be able to detect, however, is that the container holding the special prize weights slightly less than each of the other containers which all weight the same amount. You will win the special prize if you can identify the container with the special prize in exactly two weighings using a balance scale.
    How can Joy's brother win the special prize?

2. (8 answer) Find the keys to spring this trap by SOLVING PART of it at a time. Each letter represents a different digit. What digit does each letter represent?

            P A R T
            X   4
            T R A P

    (4 explanation) How did you figure it out?

3. (6 answers) A research scientist interested in the progenerative characteristics of a new strain of bacteria decided to test its reproductive rate. He knows that this type of bacteria doubles, every two minutes.   Using four test tubes of equal capacity, the scientist carefully places different amounts of bacteria in the following manner; one bacterium in test tube A, two bacteria in test tube B, four bacteria in test tube C, and eight bacteria in test tube D.

    Test tube D fills completely in exactly two hours. How long do you predict that it will take for the test tubes A, B, and C to fill?

    (4 explanation) Explain your solution.

4. (3 answer) At the I-Deal watermelon patch, every melon grown weighs precisely the same amount. Willie, the watermelon dealer, sometimes tired of answering the same question about how much his wonderful watermelons weighed so he often posed this puzzle instead: "A watermelon weighs 16.4 kilograms plus 18% of a watermelon."   What was the weight of Willie's flawless fruit (one grown watermelon)?

(4 explanation) How to you know?

5. (4 answer) The surface of Clayter Lake is 37 feet above the surface of Dinsmore Lake. The bottom of Clayter Lake is eleven feet above the bottom of Dinsmore Lake. Clayter Lake is twice as deep as Dinsmore Lake. How deep are the two lakes?

(4 explanation) Explain your answer.

6. (2 answer) A bell rings every 25 minutes while another bell rings every 40 minutes. If the bells rang together at 6 A.M., at what time would they next ring together?

(4 explanation) Explain your thinking.

Problems 7 & 8 involve the arrangement and rearrangement of toothpicks.
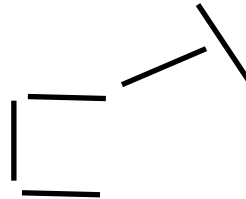Each toothpick (line) can be considered a unit segment.

7. (5) The arrangement below is built from 16 toothpicks. Rearrange 10 of these to build a single square. Draw your solution.

8. (3) The five toothpicks are used to build a gnu.

   Move exactly one toothpick to make a new gnu

   Draw your solution.

9. (10 answer)   Using the Juice Cards list them in order from **least to most** grape taste. Write the letter shown on the card.   If any are equal put an = between the two letters.

   _____ _____ _____ _____ _____ _____ _____ _____

   (4 explanation) Explain your process.

10. (12) Using the proportion cards put them into a 3 x 4 grid matching the edges where appropriate.

Write the letter from the card to match your solution.

For example:

A		
½ = x/4	1/3=4/x	X = 12 Z
X = 2		
W		