Submitting Your Work

1. Answer each question using the suggested method. (Drawing or making a list)

2. Your answer should be completed using an appropriate computer based tool that you are comfortable using. For example, "Follow the Bouncing ball" below can be done using MS Paint.

3. You cannot submit photographs of hand drawn solutions.

4. Make sure your solution contains the answer required and a short paragraph of your method. (4 or 5 sentences should be enough, don't go crazy).

5. Gather all your solutions into a single Word document (or equivalent). Convert this Word document into a PDF file.

6. Upload a single PDF document containing all your solutions.

Diagrams and Lists

This week we'll be attempting to use diagrams and lists as problem solving tools. You'll be given a set of problems and be asked to come up with different methods to solve each problem.

You must draw a diagram to solve each of these problems.

1. FOLLOW THE BOUNCING BALL

A ball rebounds one-half the height from which it is dropped. The ball is dropped from a height of 160m and keeps bouncing. What is the total vertical distance the ball will travel from the moment it is dropped to the moment it hits the floor for the fifth time.

2. WORM JOURNEY

A worm is at the bottom of a 12m wall. Every day the worm crawls up 3m, but at night it slips down 2m. How many days does it take the worm to get to the top of the wall.

3. RACE

Becky, Ruby, Isabel, Lana, Alma, and Sabrina ran an 800m race. Alma beat Isabel by 7 meters. Sabrina beat Becky by 12 meters. Alma finished 5 meters ahead of Lana but 3 meters behind Sabrina. Ruby finished halfway (distance wise) between the first and the last women. In what order did the women finish? What were the distances between them?

4. A WHOLE LOT OF SHAKING GOIN' ON

If six people met at a party and all shook hands with one another, how many handshakes would be exchanged?

5. ROCK CLIMBING

Amy is just learning how to rock climb. Her instructor takes her to a 13m climbing wall for her first time. She climbs 2.5m in 2 minutes but then slips back 1m in 10 seconds. This pattern repeats until she reaches the top. How long will it take her to reach the very top of the wall?

Solve each of these problems by making a systematic list.

1. CARDS AND COMICS

Paul's daughter has €6.00 she wants to spend on comic books and superhero cards. Comic books cost 60c each, and deluxe packages of superhero cards cost €1.20 each. List all the ways she can spend all of her money on comic books, superhero cards, or both.

2. TENNIS TOURNAMENT

Justin, Julie, Jamie, Matt, Ryan, and Roland are the six players in a round-robin tennis tournament. Each player will play a set against each of the other players. List all the sets that need to be played.

3. FEE CONCERT TICKETS

Alex, Blake, Chuck, and Darren all called into a radio show to get free tickets to a concert. List all the possible orders in which their calls could have been received.

4. TWENTY-FOUR

How many ways are there to add four positive even numbers to get a sum of 24?

5. FINISHED PRODUCT

The product (2 numbers multiplied) of two whole numbers is 360, and their sums (2 numbers added) is less than 100, what are the possibilities for the two numbers?

Classic Problems (Try to solve any 2 of these 3 problems)

1. THE WEIGHT OF A BRICK

If a brick, balances with three-quarters of a brick and three quarters of a kg. Then how much does the brick weigh?

2. THE HUNGRY BOOKWORM

The four volumes of the *'world of mathematics'* are sitting side by side on a bookshelf, in order, with volume 1 on the left. A bookworm tunnels through the front cover of volume 1 all the way through the back cover of volume 4. Each book has a front cover and a back cover that each measure 4mm. The pages of each book measure 26mm. How far does the bookworm tunnel? CLUE: The answer is NOT 136mm

3. ARCHERY PUZZLE

A target shows the numbers 16, 17, 23, 24, 39, and 40. How many arrows does it take to score exactly 100 on this target?