Scenarios

For each scenario, first solve it and then create a similar problem for your friends to solve.

1. Tom likes to build towers. He has a collection of black cubes and white cubes.
   Putting different cubes on top of one another forms a tower.
   If the height of a tower is the number of cubes used in that tower,
   a. How many different towers can be made which are of height one?
   b. How many different towers can be made which are of height two?
   c. How many different towers can be made which are of height three?
   d. How many different towers can towers be built for any particular height?

2. In a round robin tennis championship, 20 people are to play each other.
   How many games need to be played?

   The organizers decide that there are too many games and so adopt a knock-out system in the competition. How many games are then played under this system?

   Is a group of 20 an ideal number for a knock-out competition?
   Are there ideal numbers?
   What makes them ideal?

3. Various whole numbers add together to make 2001.
   What is the biggest possible product of these whole numbers?

Solutions to scenarios:

1. a. 2
   b. 4
   c. 8
   d. 2^n

2. Part 1
   20 x 19 = 380 380 ÷2 = 190

   Part 2
   10 + 5 + 3 + 1

3. 2 to the power of 999 times 3