# Problem Solving- Working Systematically

1. **Two Primes Make One Square**- Flora had a challenge for her friends. She asked, "Can you make square numbers by adding two prime numbers together?"
   Tom had a think. "Well, let me see... I know that 4 = 2 + 2. That's a good start!"
   Have a go yourself. Try with the squares of the numbers from 4 to 20.

2. **Find Fifteen**- Tim had nine cards, each with a different number from 1 to 9 on it. He put the cards into three piles so that the total in each pile was 15. How could he have done this?
   Can you find *all* the different ways Tim could have done this?

3. **Magic Vs**- Place each of the numbers 1 to 5 in the V shape below so that the two arms of the V have the same total. How many different possibilities are there?
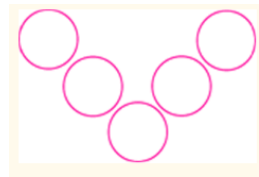
4. **Buying a Balloon**- Lola bought a balloon at the circus. She gave the clown six coins to pay for it. What could Lola have paid for the balloon? Which of your answers seems a reasonable amount to pay for a balloon?

5. **Make 37**- Four bags contain a large number of 1s, 3s, 5s and 7s. Pick any ten numbers from the bags so that their total is 37.

6. **Make 100**- You must choose four different digits from 1–9 and put one in each box to make 100. For example:

This gives four two-digit numbers:

| 5 | 2 |
|---|---|
| 1 | 9 |

52(reading along the 1st row)
19(reading along the 2nd row)
51(reading down the left hand column)
29(reading down the right hand column)

In this case their sum is 151. Try a few examples of your own. Is there a quick way to tell if the total is going to be even or odd? Your challenge is to find four different digits that give four two-digit numbers which add to a total of 100.

7. **Square of Numbers**- Can you put the numbers 1 to 8 into the circles so that the four calculations are correct?

8. Triangles- How many triangles can you make on this peg board?