30 Susie the snake

Susie has 19 eggs.

You could make up similar problems with, say, 21 eggs.

If you counted them in fours, there would be 1 left over.

If you counted them in fives, there would be 1 left over.

31 Three monkeys

There are 10 possibilities:

1, 3, 21	3, 5, 17
1, 5, 19	3, 7, 15
1, 7, 17	3, 9, 13
1, 9, 15	5, 7, 13
1, 11, 13	5, 9, 11

What if the monkeys ate 24 nuts, with each of them eating a different even number of nuts?

The possible answers are:

2, 4, 18	4, 6, 14
2, 6, 16	4, 8, 12
2, 8, 14	6, 8, 10
2, 10, 12	

32 Card tricks

Systematic working helps to make sure that all possibilities have been considered.

Four different cards with a total of 20 are:

1, 4, 7, 8	2, 3, 7, 8	3, 4, 5, 8
1, 5, 6, 8	2, 4, 6, 8	3, 4, 6, 7
	2, 5, 6, 7	

Three different cards with a total of 16 are:

1, 7, 8	2, 6, 8	3, 5, 8	4, 5, 7
		3, 6, 7	

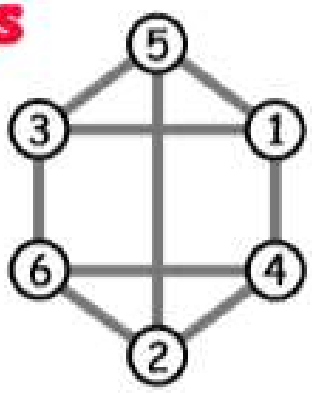
You could try other totals. For example, four cards with a total of 18 are:

1, 2, 7, 8	2, 3, 6, 7	3, 4, 5, 6
1, 3, 6, 8	2, 4, 5, 7	
1, 4, 5, 8		
1, 4, 6, 7		

Explore the different totals that can be made with four cards. (It is possible to make any total from 10 to 26.)

33 Neighbours

Here is one possible solution.



Can you find others?