Solutions to Puzzles and Problems
for Years 3 and 4

26. Rows of coins
5p, 2p, 20p, 1p, 10p
2p, 5p, 1p, 2p, 1p, 5p, o4 its reverse.
When two 10p coins are also used:
2p, 5p, 10p, 2p, 1p, 1p, or its reverse.

27. Roly Poly
The total number of dots on the dice is 21. Of these dots 17 are showing, so the face with 4 dots is face down.

The total number of dots on two dice is 42, so 12 dots are hidden. The two hidden faces must each have 6 dots.

28. Dan the detective

There are six different sums and six different (positive) differences.

48 and 63

29. Spaceship

3 Tripods (9 legs) and 7 Bipods (14 legs), or
5 Tripods (15 legs) and 4 Bipods (8 legs).

What if Tripods with 3 legs and Quadrapods with 4 legs are on the space ship?
Find two different ways to make 23 legs.

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?
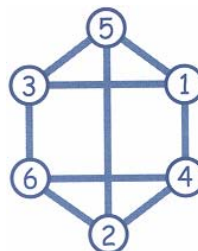
34. Queen Esmeralda's coins

There were 7, 3, 4 and 6 coins in each pile.

The problem can be solved by trial and error.

35. Duck ponds

1. (2) (2) (5) (5)

2. (2) (4) (8)

3. (5) (4) (3) (2)

You could try similar problems with other numbers. For example using 15 ducks and

5 ponds	make each hold 1 more than the one before (1, 2, 3, 4, 5)
4 ponds	make each hold twice as many as the one before (1, 2, 4, 8)
3 ponds	make each hold 4 more than the one before (1, 5, 9)
3 ponds	make each hold 2 less than the one before (7, 5, 3)

36. Treasure hunt

Jed	®	Ⓓ	Ⓔ	®Ⓓ	®Ⓔ	ⒺⒹ	®ⒺⒹ
Jake	ⒺⒹ	ⒺⓇ	ⒹⓇ	Ⓔ	Ⓓ	®	ⒺⒹ®

37. Stamps

Tilly stuck three 10p stamps and five 5p stamps on her parcel.

No of 5p stamps	No of 10p stamps	Total value
8	0	40p
7	1	45p
6	2	50p
5	3	55p
4	4	60p
3	5	65p
2	6	70p
1	7	75p
0	8	80p

To adapt the problem, change the cost of the parcel, or use different stamps.

38. Maisie the mouse

Maisie had 46 breadcrumbs.

The problem can be solved by experiment.

Alternatively, list all the multiples of 4.
Add 2 to each number in the list.

Now list all the multiples of 5. Add 1 to each number in the list.

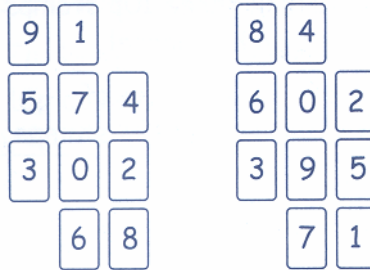Now look for a number lying between 30 and 50 that is common to both lists.

To adapt the problem, group the breadcrumbs in 5s and 6s or 7s and 9s.

39. Kieron's cats

Kieron's cats weigh 5kg, 2kg and 6kg.

40. Next door numbers

For example:

9	1	
5	7	4
3	0	2
	6	8

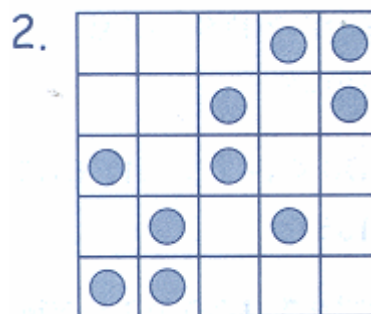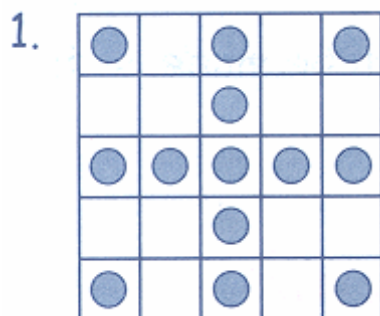| 8	4	
6	0	2
3	9	5
	7	1

41. Nick names

Dawn is Ace.
Mark is Curly.
Josh is Fudgy.
Tina is Spider.

42. Stickers

There are 8 stickers in a full sheet.

43. Odds and evens

Several solutions are possible. For example:

1.

2.

44. More stamps

Rosie bought four 20p stamps and twelve 10p stamps.

45. Sandcastles

Over the 5 days Lisa made 24, 20, 16, 12 and 8 sandcastles.

She made 84 sandcastles altogether.

46. Sail Away

Two women cross the river together.
One woman stays there and one brings the boat back.

One man crosses the river.
One woman brings the boat back.

Two women cross the river together.
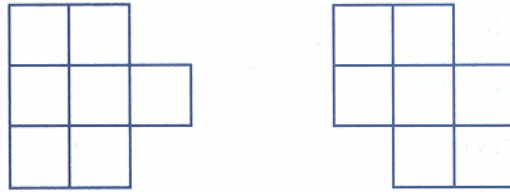One woman stays there and one brings the boat back.

The second man crosses the river.
One woman brings the boat back.

Two women cross the river together.

47. Straw squares

You can make a maximum of 9 squares with 20 straws.
Here are two ways of doing it.

For older children, try 40 straws.

With these you can make a maximum of 30 squares.

48. King Arnold

Three knights can sit with King Arnold in 6 different ways.

Four knights can sit with King Arnold in 24 different ways.

49. Footsteps in the snow

Counting from zero in 2s, 3s and 5s will first match up at 30, when Little has taken 15 footsteps.
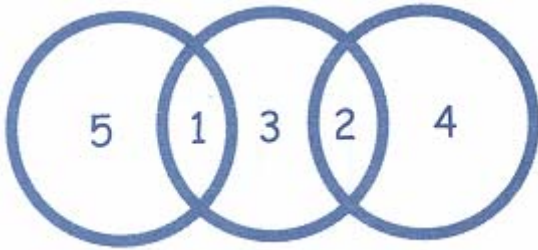
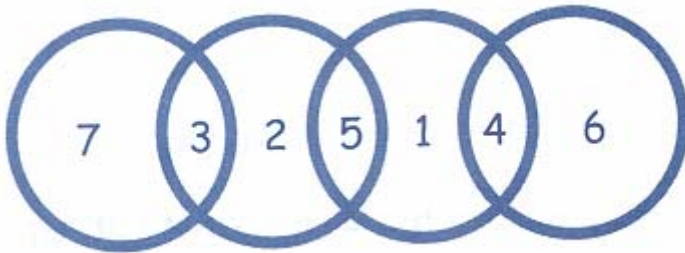## 50. Ski lift

The ski lift has 180 chairs.

51. Lighthouses

All three lights will be off after 5 seconds.

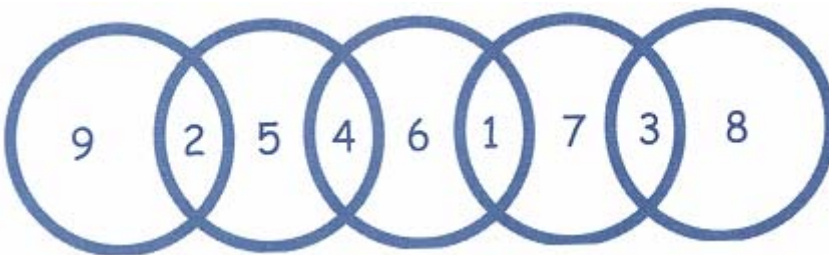All three lights will next come on together after 120 seconds.

52. Circle sums

5 1 3 2 4

or its reverse

7 3 2 5 1 4 6

or its reverse

9 2 5 4 6 1 7 3 8

or its reverse