



## Stage 3 ★ Mixed Selection 1

### 1. Shape sums

Suppose:

$$\triangle + \triangle = \square$$

$$\square + \triangle = \bigcirc$$

$$\diamond = \bigcirc + \square + \triangle$$

How many  $\triangle$ s are equal to  $\diamond$ ?

### 2. Granny's age

Granny swears that she is getting younger. She has calculated that she is four times as old as I am now, but remembers that 5 years ago she was five times as old as I was at that time.

What is the sum of our ages now?

### 3. Partial magic

In a magic square, each row, each column and both main diagonals have the same total. In the partially completed magic square shown, what number should replace x?

18			
13	15		
	10	11	17
	x	16	14

### 4. Fifty coins

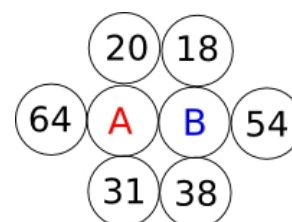
Cheryl finds a bag of coins. There are 50 coins inside and the value of the contents is £1.81. Given that it contains only two-pence and five-pence coins, how many more five-pence coins are there inside the bag than two-pence coins?

### 5. Currency exchange

Dan has nine 20p coins and his sister Ann has eight 50p coins. What is the smallest number of coins that must change hands so that Dan and Ann end up with equal amounts of money?

### 6. Average surroundings

Ali (A) and Baba (B) are shown surrounded by six thieves. The thieves' ages are given. Ali's age is the average of his four nearest neighbours', and so is Baba's. How old is Ali?



*These problems are adapted from UKMT Mathematical Challenge problems ([ukmt.org.uk](http://ukmt.org.uk)).*