

**Stage 3 ★****Mixed Selection 2 - Solutions****1. Ice cream pie**

90 chocolate ice creams were sold.

The angle occupied by the 'chocolate' sector is $\frac{1}{2}(360^\circ - 90^\circ) = 135^\circ$. This is 1.5 times bigger than the 'strawberry' sector and hence the number of chocolate ice creams sold is $1.5 \times 60 = 90$.

2. Balancing the books

Over a two-week period, the required number of visitors is $14 \times 30\,000 = 420\,000$. Hence the number required this week is $420\,000 - 120\,000 = 300\,000$.

3. Sevens

If there are 7 numbers that have a mean of 7, then $\text{Sum}/7 = 7$ so $\text{sum} = 49$.

The smallest that the first six numbers could be is 1, 2, 3, 4, 5 or 6. These have a total of 21.

This means the largest that the seventh number could be is $49 - 21 = 28$.

4. Average discovery

Whatever the missing number is, the median and mode will still be 7. For the mean to be 7, the total must be 35. So the missing number is 9.

These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk)