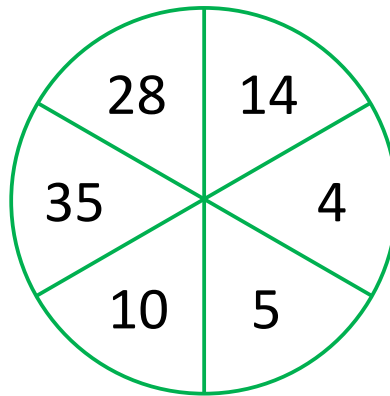Six numbers are arranged on cake slices, so that opposite slices multiply to give identical answers:
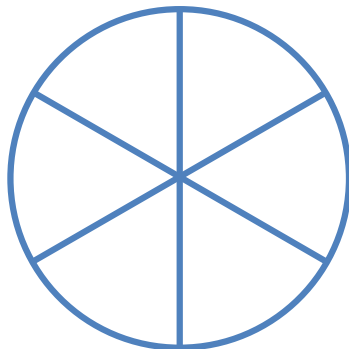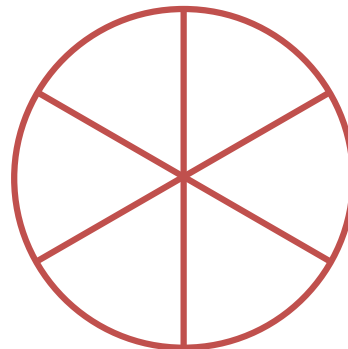

$$28 \times 5 = 140 \qquad 35 \times 4 = 140 \qquad 10 \times 14 = 140$$

Fill in the slices below with the numbers given, so that opposite slices multiply to give identical answers. You are only given five numbers, so you must work out how to pair the numbers as well as find the missing number.
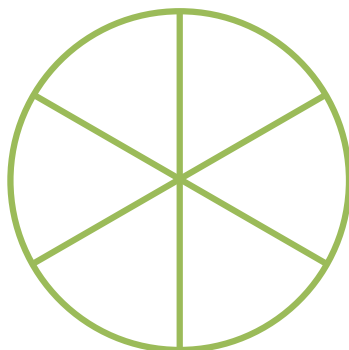
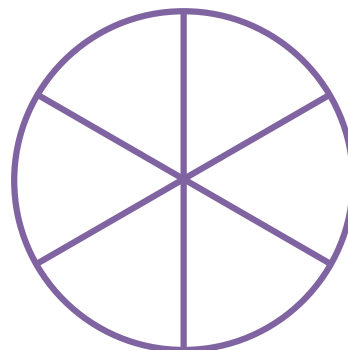1.   6, 15, 38, 57, 95

2.   6, 21, 42, 46, 161

3.   4, 28, 35, 49, 245

4.   13, 15, 39, 45, 65

Teaching notes

These puzzles provide excellent practice for long multiplication, as well as improving problem solving skills by:
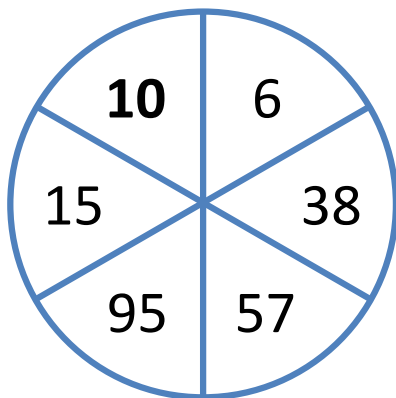
- allowing students to explore and refine their own methods
- encouraging well structured notes when using trial and error.

Suggested starting methods

- Pair off the numbers and see which two numbers have identical products. Then divide the remaining number into this product to find the missing number. There are ten possible pairs to try.
- Start by multiplying the largest number by the smallest number and seeing if any pairs from the remaining three numbers have the same product. If not, you know that either the largest number or the smallest number is paired with the missing number, reducing the number of pairs to try.
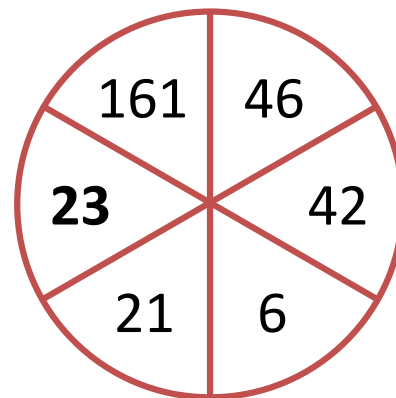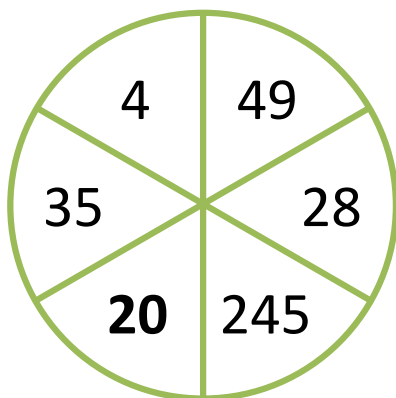
Answers

1.

10 6
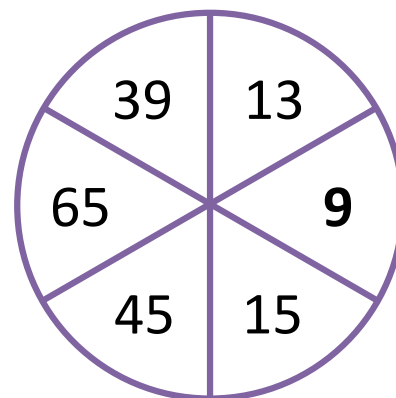15   38
95 57

Product: 570

2.

161 46
23   42
21   6

Product: 966

3.

4   49
35   28
20 245

Product: 980

4.

39 13
65   **9**
45 15

Product: 585