

Jasper throws two dice and adds the results.

Lena throws two dice and multiplies the results.

- a** Draw a possibility space for Jasper's and Lena's experiments.
- b** Find the probability that Jasper scores 8.
- c** Find the probability that Lena scores 6.
- d** Find the probability that Lena scores 5 or less.

**1** Two fair dice are thrown and the difference between the scores showing on the two dice is recorded.

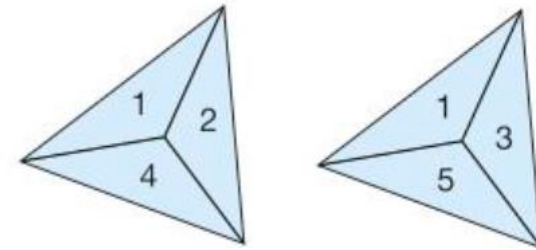
- a** Make a table to show the possibility space.
- b** Write the set of all possible outcomes.
- c** Find the probability that the difference is
  - i** 0
  - ii** 3
  - iii** 6
  - iv** a prime number.

**2** A fair coin is tossed three times and the outcome recorded (for example HHT).

- a** Write the set of the 8 possible outcomes.
- b** In how many of these are exactly two heads seen?
- c** In how many do you see three of the same?

**3** Two fair spinners are used. On one the possible scores are 1, 2 and 4, on the other the scores are 1, 3 and 5. The sum of the scores on the two spinners is recorded.

- a** Make a table to show the possibility space.
- b** Write the set of all possible outcomes.
- c** Find the probability that the score is
  - i** 2
  - ii** 3
  - iii** even



**4** Two fair dice are thrown together. One is an ordinary dice with the numbers 1 to 6, and the other has faces labelled 1, 2, 2, 3, 3, 3.

- a** Make a table to show the possibility space.
- b** Find the probability that the score is
  - i** 6
  - ii** 7
  - iii** 9
  - iv** 3.
- c** What other scores are as likely to happen as 6?
- d** Why are some scores less likely to occur than 6?

1

**a**

	1	2	3	4	5	6
1	0	1	2	3	4	5
2	1	0	1	2	3	4
3	2	1	0	1	2	3
4	3	2	1	0	1	2
5	4	3	2	1	0	1
6	5	4	3	2	1	0

**b** {0, 1, 2, 3, 4, 5}

**c** i  $\frac{1}{6}$       ii  $\frac{1}{6}$       iii 0      iv  $\frac{4}{9}$

2

**a** {HHH, HHT, HTH, THH, TTH, THT, HTT, TTT}

**b** 3      **c** 2

3

**a**

		Spinner 2			
Spinner 1			1	3	5
	1	2	4	6	
	2	3	5	7	
	4	5	7	9	

**b** {2, 3, 4, 5, 6, 7, 9}

**c** i  $\frac{1}{9}$       ii  $\frac{1}{9}$       iii  $\frac{1}{3}$

4

**a**

	1	2	2	3	3	3
1	2	3	3	4	4	4
2	3	4	4	5	5	5
3	4	5	5	6	6	6
4	5	6	6	7	7	7
5	6	7	7	8	8	8
6	7	8	8	9	9	9

**b** i  $P(6) = \frac{1}{6}$       ii  $P(7) = \frac{1}{6}$       iii  $P(9) = \frac{1}{12}$       iv  $P(3) = \frac{1}{12}$

**c** 4, 5 and 7.

**d** 6 can be obtained from any of the outcomes on the unusual dice. This is not so for 2, 3, 8, and 9 which all have lower probabilities than 6.

## Non-calculator

Here are five number cards.



Two of the five cards are picked at random.

Work out the probability that the total of the two numbers is **more than** 30