GCSE HIGHER · REVISION MAT 1

# Sample spaces

**1** List all the possible outcomes when two coins are flipped.

**2** Two dice are rolled and the scores added.

How many outcomes give a total of 7?

| + | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 2 | 3 | 4 | 5 | 6 | 7 |
| **2** | 3 | 4 | 5 | 6 | 7 | 8 |
| **3** | 4 | 5 | 6 | 7 | 8 | 9 |
| **4** | 5 | 6 | 7 | 8 | 9 | 10 |
| **5** | 6 | 7 | 8 | 9 | 10 | 11 |
| **6** | 7 | 8 | 9 | 10 | 11 | 12 |

**3** Explain why there are 36 outcomes when two dice are rolled.

**4** Find P(total $\geq$ 10).

| + | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 2 | 3 | 4 | 5 | 6 | 7 |
| **2** | 3 | 4 | 5 | 6 | 7 | 8 |
| **3** | 4 | 5 | 6 | 7 | 8 | 9 |
| **4** | 5 | 6 | 7 | 8 | 9 | 10 |
| **5** | 6 | 7 | 8 | 9 | 10 | 11 |
| **6** | 7 | 8 | 9 | 10 | 11 | 12 |

**5** A spinner numbered 1 to 3 is spun and a coin is flipped.

Show that there are 6 outcomes.

**6** Two dice are rolled and the scores multiplied.

Find P(the product is even).

| × | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1 | 2 | 3 | 4 | 5 | 6 |
| **2** | 2 | 4 | 6 | 8 | 10 | 12 |
| **3** | 3 | 6 | 9 | 12 | 15 | 18 |
| **4** | 4 | 8 | 12 | 16 | 20 | 24 |
| **5** | 5 | 10 | 15 | 20 | 25 | 30 |
| **6** | 6 | 12 | 18 | 24 | 30 | 36 |

**7** Show that

P(the difference is 0) = $\frac{1}{6}$.

| − | 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 |

**8** Three coins are flipped.

List the sample space and find P(exactly two heads).

Mr&Mrs MATHS

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# Sample spaces

**1** HH, HT, TH, TT

**2** 6

**3** Each of the 6 scores on one dice can pair with each of 6 on the other: 6 × 6.

**4** Totals 10, 11, 12: 3 + 2 + 1

$\frac{6}{36} = \frac{1}{6}$

**5** 1H, 1T, 2H, 2T, 3H, 3T

3 × 2 = 6

**6** Only odd × odd is odd: 9 outcomes

$\frac{27}{36} = \frac{3}{4}$

**7** 6 doubles out of 36

$\frac{1}{6}$

**8** HHH, HHT, HTH, THH, HTT, THT, TTH, TTT

$\frac{3}{8}$

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