Probability

- Calculating the probability of simple events occurring

Keywords
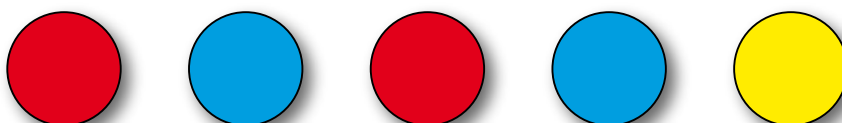
You should know

explanation 1a   explanation 1b   explanation 1c

1 These counters are put into a bag. One counter is taken out at random.

   a How many outcomes are there in total?

   b How many outcomes are red?

   c What is the probability that the counter taken out is red?

   d What is the probability that the counter taken out is not red?

   e How many outcomes are blue or yellow?

   f What is the probability that the counter taken out is either blue or yellow?

2 These socks are in a drawer.

Shen grabs a sock from the drawer without looking.

Find the probability he gets these socks.

   a a spotty sock

   b a striped sock

   c a zig-zag sock

   d a sock with some red in it

   e a sock with *no* red in it

3 Here are some *Higher or Lower?* games.

  i Write the probability that each '?' card is higher.

  ii Write the probability that each '?' card is lower.

a

| 6 | 3 | 2 | 0 | ? | | | | | |

b

| 4 | 2 | 0 | 3 | 1 | 7 | ? | | | |

c

| 6 | 9 | 2 | 7 | 8 | 4 | 5 | ? | | |

4 A fair 10-sided dice numbered from 1 to 10 is rolled.

  a How many outcomes are there?

  b How many outcomes are 7 or more?

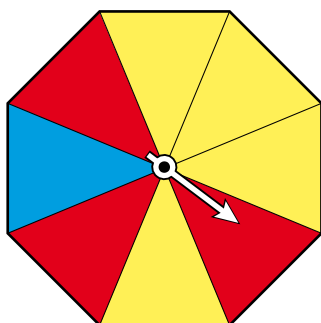 **c** How many outcomes are even?

  d Which event is more likely: getting 7 or more, or getting an even number? Explain how you got your answer.

explanation 2a   explanation 2b

5 This spinner is a regular octagon.

A regular octagon has eight sides which are all the same length.

  a What fraction of the spinner is coloured blue?

  b What fraction of the spinner is coloured yellow?

  c Find the probability of the spinner landing on each of these colours.

   i blue   **ii** yellow   **iii** red

6 You roll a normal 6-sided dice.
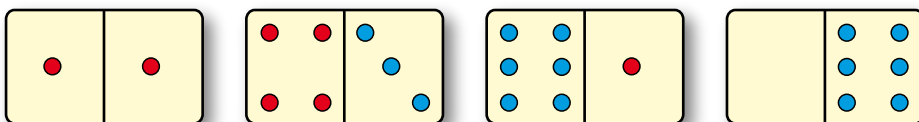
   a How many outcomes are there for each event?

   i a score of 6   **ii** a score of 7

   iii a score of 1 or 2   **iv** an even score

   b What is the probability of each event in part **a**?

7 These dominoes are placed face down on the table.

Jamie picks up one at random.

What is the probability he picks each of these?

   a a domino with a blank on it

   b a domino with a total of seven spots on it

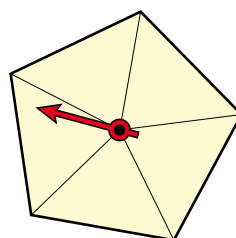   **c** a domino with a one on it

   d a domino with a total of one spot on it

8 This is a fair spinner.

Zeb wants to write a 1, 2 or 3 in each section so that both

   • 1 and 2 are equally likely to come up

   • 1 and 2 are both twice as likely to come up as 3

How should he write the numbers in the sections?

9 Two friends are playing a game with this spinner.
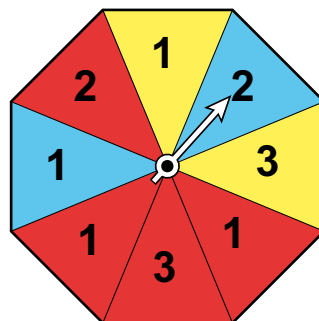
What is the probability of these events?

   a spinner lands on red

   b spinner lands on 1

   c spinner lands on on a red 1

   d spinner lands on yellow 2
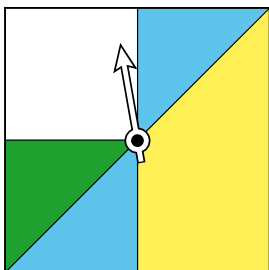
   e spinner lands on red 1 or on a blue 1

10 There are 4 blue, 2 purple, 1 orange, 3 red and 2 yellow counters in a bag.

One counter is taken without looking.

What is the probability that it is each of these colours?

a orange **b** blue **c** red

11 This spinner is spun.

a Which colour are you most likely to get?

b Which two colours are equally likely?

c Which colour is least likely?

Try to explain how you decided on your answers.

12 In the Lotto there are 49 balls numbered from 1 to 49.

What is the probability of the first ball being each of these?

a 13 **b** an odd number

c an even number **d** a number with a 1 in it

13 In a fairground game there are 250 straws in a jar.

Each straw has a ticket rolled up inside it.

1 of the tickets wins a prize of £10.
2 of the tickets win a prize of £5.

James is the first person to pick a straw.
What is the probability of each event?

a He wins the £10 prize.

b He wins any prize.

c He does not win any prize.