

Calculating probability

Name

1. The table shows the probability of winning each prize in a lucky dip.

Prize	Probability
Balloon	0.16
Model	0.34
Puzzle	0.04
Toy	0.32
Whistle	

- (a) What is the probability of winning either a balloon **or** a puzzle?

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Answer

- (b) What is the probability of winning a whistle?

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Answer

2. The table shows the probabilities that Ian listens to a CD, a tape or the radio while he is doing his homework.

Listens to	Probability
CD	0.42
Tape	0.25
Radio	0.10

What is the probability that Ian does **not** listen to a CD, a tape or the radio while he is doing his homework tonight?

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Answer

3. Each week Mrs Khan borrows a story book from the library.
 She has four favourite authors.
 She always chooses a book by one of these authors.
 The table shows three of the probabilities.

Author	Probability
Arthur Bell	
Jane Foster	0.23
Vikram Murshed	0.42
Wendy Williams	0.10

- (a) Calculate the probability that Mrs Khan chooses a book by either Jane Foster or Wendy Williams.

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Answer

- (b) Calculate the probability that Mrs Khan chooses a book by Arthur Bell.

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Answer

Mrs Khan borrows 52 books each year.

- (c) How many times a year would you expect Mrs Khan to borrow a book by Vikram Murshed?

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Answer

4. A lecturer chooses a student from a class, at random.
The probability of various events are given in the table.

Event	Probability
The person chosen is a man.	0.30
The person chosen is married and has children.	0.65
The person chosen is married and does not have children.	0.15
The person chosen is a woman and is married.	0.60

- (a) Work out the probability that the person chosen is a woman.

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Answer

- (b) Work out the probability that the person chosen is married.

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Answer

- (c) One student attempts to find the probability that the person chosen is either a woman or is married. She adds the results of part (a) and part (b).
Explain how you can easily tell from her answer why this is wrong, and explain why the method does not work.

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- (d) Calculate the probability that the person chosen is either a woman or is married.

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Answer

5. Harry is playing a computer game. The computer generates random numbers. When the computer shows a number, Harry has to guess whether the next number shown will be higher, lower or the same.

The table gives the probabilities of the next number being higher or lower than the first.

Next number compared with the first number	Probability
Higher	0.34
Lower	0.59
Same	

- (a) What is the probability that the next number will be the same as the first number?

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Answer

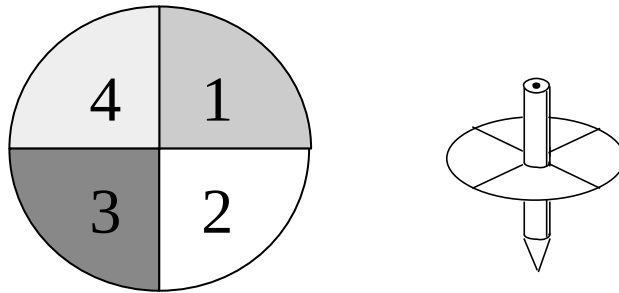
- (b) What is the probability that the next number will be either lower or the same as the first number?

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Answer

6. A four sided spinner has sides numbered 1, 2, 3, and 4. The spinner is biased.



The table shows the probability of the spinner landing on each number.

Number	Probability
1	0.10
2	0.15
3	0.45
4	0.30

- (a) What is the probability that the spinner will land on either 3 **or** 4?

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Answer

The spinner is spun and a fair six-sided dice is thrown.



- (b) Calculate the probability of getting a 4 on the spinner **and** a 4 on the dice.

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Answer

7. Steve keeps some snooker balls in a bag.
The number of balls of each colour are shown in the table.

Colour	Number
Red	15
Black	1
Pink	1
Blue	1
Brown	1
Green	1
Yellow	1
White	2

Steve picks one ball at random from the bag.

- (a) What is the probability that the ball is white or red?

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Answer

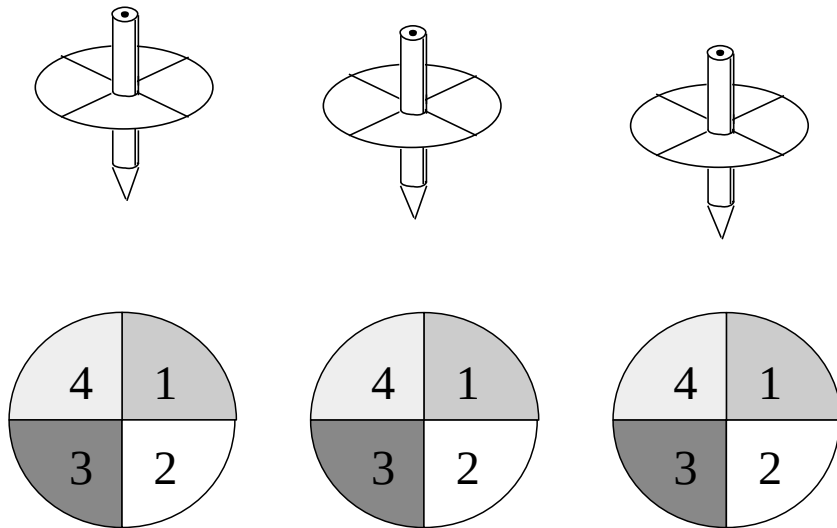
All the balls are in the bag and Steve picks one ball from the bag. If the ball is not white or red he replaces it in the bag and then picks another ball.

- (b) Calculate the probability that the first two balls that Steve picks are **not** white or red.

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Answer

8. Sacha has 3 fair spinners. Each spinner is numbered 1, 2, 3 and 4.



He spins all 3 spinners.

- (a) What is the probability that he gets three fours?

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Answer

- (b) What is the probability that he gets exactly one four?

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Answer

9. In a box there are 4 packets of Cheese and Onion flavoured crisps, 3 packets of Salt and Vinegar flavoured crisps, 2 packets of Plain crisps and 1 packet of Beef flavoured crisps. Adam selects a packet of crisps at random and eats them, Bianca then selects a packet of crisps at random and eats them.

- (a) Calculate the probability that one of them ate the Beef flavoured crisps.

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Answer

- (b) Calculate the probability that both of them ate the same flavoured crisps.

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Answer

Answers

1. (a) 0.2 or equivalent (b) 0.14
2. 0.23
3. (a) 0.3 (b) 0.25 (c) $0.42 \times 52 = 21.84$
4. (a) 0.7 (b) 0.8
(c) $0.8 + 0.7 = 1.5$, which is greater than one, so not possible for an answer.
She is counting *women who are married twice*.
(d) $0.8 + 0.7 - 0.6 = 0.9$
5. (a) 0.07 (b) 0.66
6. (a) 0.75 (b) 0.05
7. (a) $\frac{17}{23}$ (b) $\frac{36}{529}$
8. (a) $\frac{1}{64}$ (b) $\frac{27}{64}$
9. (a) $\frac{2}{10} = \frac{1}{5}$ (b) $\frac{2}{9}$