5.3 Listing Outcomes and Sample Space Diagrams: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A spinner has three equal regions: red, green and blue. A six-sided die is rolled. You win if the spinner shows red and the die shows an even number. Find the probability of winning.

(2)

---

2 Two fair six-sided dice are rolled. Find the probability that at least one die shows a 6. Give a method using the complement.

(2)

---

3 A fair coin is tossed and a 3-sided spinner showing 1, 2, 3 (equal chances) is spun. Find the probability that the coin shows tails or the spinner shows 2 (or both).

(3)

---

4 List the sample space for tossing two fair coins. In your listing treat the first and second coin as distinct (order matters).

(2)

© Revision Library | revisionlibrary.co.uk

5 Two fair six-sided dice are rolled and the scores are added. Work out the probability that the total is more than 6.

(3)

---

6 A cafe sells 4 different sandwiches and 2 different drinks. A meal deal is one sandwich and one drink. How many different meal deals are possible?

(2)

---

7 A 6-sided die is rolled and then a coin is tossed. Write down the sample space for the two events (die outcome, coin).

(2)

---

8 A bag contains three counters labelled A, B and C. A counter is picked at random, replaced, then a second counter is picked.

(a) List the sample space. **(1)**

(b) Find the probability that both picks are the same letter. **(2)**

© Revision Library | revisionlibrary.co.uk

9 A fair 4-sided spinner numbered 1 to 4 is spun and a fair coin is tossed. Find the probability that the spinner shows an even number and the coin shows heads, or the spinner shows 1.

(3)

---

10 A fair 5-sided spinner numbered 1 to 5 is spun once. How many possible outcomes are there?

(1)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 5.3 Listing Outcomes and Sample Space Diagrams: 30-minute Pack

Question 1

recognise spinner favourable 1/3 and die even outcomes 3/6 or 1/2 then multiply	M1
probability 1/3 x 1/2 = 1/6 cao	A1

Answer: **1/6**

Question 2

use complement: probability no six on a die is 5/6 so both not six $(5/6)^2$ = 25/36 or state 25 favourable non-six pairs	M1
probability at least one six = 1 - 25/36 = 11/36 cao	A1

Answer: **11/36**

Question 3

list total outcomes 2 x 3 = 6 and identify favourable: tails with any spinner (T,1)(T,2)(T,3) = 3 and heads with spinner 2 (H,2) = 1, or use addition with intersection	M1
count intersection correctly: (T,2) counted in both sets so use inclusion-exclusion or use combined list to get 4 favourable	M1
probability 4/6 = 2/3 cao	A1

Answer: **2/3**

Question 4

correct method of listing 2x2 outcomes, e.g. start with H then T for second coin	M1
correct complete list: HH, HT, TH, TT cao	A1

Answer: **HH, HT, TH, TT**

Question 5

list or table of 36 outcomes	M1
21 outcomes with a larger total	M1
7/12 cao	A1

Answer: **7/12**

Question 6

4 x 2	M1
8 cao	A1

Answer: **8**

Question 7

method showing 6 die faces each paired with H and T	M1
all 12 pairs listed cao	A1

Answer: **(1,H), (1,T), (2,H), (2,T), (3,H), (3,T), (4,H), (4,T), (5,H), (5,T), (6,H), (6,T)**

Question 8

(a) all nine ordered pairs listed cao	B1

(a) Answer: **(A,A), (A,B), (A,C), (B,A), (B,B), (B,C), (C,A), (C,B), (C,C)**

(b) identify 3 favourable outcomes (A,A), (B,B), (C,C) and total 9	M1
(b) probability 3/9 = 1/3 cao	A1

(b) Answer: **1/3**

Question 9

identify the sample space of 8 outcomes and the 2 outcomes for even-and-heads: (2,H), (4,H)	M1
add the 2 outcomes where the spinner shows 1: (1,H), (1,T), noting no overlap with the first event	M1
1/2 cao oe (e.g. 4/8)	A1

Answer: **1/2**

Question 10

5 cao	B1

Answer: **5**

© Revision Library | revisionlibrary.co.uk