5.3 Listing Outcomes and Sample Space Diagrams: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Stretch. A bag contains 3 red, 2 green and 1 blue counters. A counter is drawn at random, replaced, and then a second counter is drawn. Find the probability both draws are green.

(3)

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2 A coin is flipped and a spinner numbered 1 to 3 is spun. List all the possible outcomes (for example H1 means heads and 1).

(2)

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3 12 cards are numbered 1 to 12. One card is chosen at random. Work out the probability that the number on the card is less than 11. Give your answer as a fraction in its simplest form.

(2)

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4 Two fair six-sided dice are rolled and the scores are added. Work out the probability that the total is more than 7.

(3)

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5 10 cards are numbered 1 to 10. One card is chosen at random. Work out the probability that the number on the card is an even number. Give your answer as a fraction in its simplest form.

(2)

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6 A coin is flipped and a spinner numbered 1 to 4 is spun. List all the possible outcomes (for example H1 means heads and 1).

(2)

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7 15 cards are numbered 1 to 15. One card is chosen at random. Work out the probability that the number on the card is a prime number. Give your answer as a fraction in its simplest form.

(2)

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8 A coin is flipped and a spinner numbered 1 to 2 is spun. List all the possible outcomes (for example H1 means heads and 1).

(2)

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9 A spinner has three equal sections coloured red, blue and green. The spinner is spun once and then a fair coin is tossed once. List the sample space for these two events (spin, then toss).

(2)

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10 50 cards are numbered 1 to 50. One card is chosen at random. Work out the probability that the number on the card is a factor of 50. Give your answer as a fraction in its simplest form.

(2)

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11 25 cards are numbered 1 to 25. One card is chosen at random. Work out the probability that the number on the card is a factor of 25. Give your answer as a fraction in its simplest form.

(2)

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12 Spinner A has the numbers 1 to 4 and spinner B has the numbers 1 to 3. Each spinner is fair. Both are spun and the two scores are added. Work out the probability that the sum is exactly 6.

(3)

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13 30 cards are numbered 1 to 30. One card is chosen at random. Work out the probability that the number on the card is an even number. Give your answer as a fraction in its simplest form.

(2)

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14 30 cards are numbered 1 to 30. One card is chosen at random. Work out the probability that the number on the card is a prime number. Give your answer as a fraction in its simplest form.

(2)

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15 A code is made from two different digits chosen from 1, 2, 3, 4, 5. The order matters. How many codes are possible?

(2)

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16 30 cards are numbered 1 to 30. One card is chosen at random. Work out the probability that the number on the card is a factor of 30. Give your answer as a fraction in its simplest form.

(2)

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17 A fair six-sided die is rolled and a fair spinner numbered 1 to 4 is spun. The two scores are multiplied. Work out the probability that the product is even.

(3)

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18 Spinner A has the numbers 1 to 5 and spinner B has the numbers 1 to 3. Each spinner is fair. Both are spun and the two scores are added. Work out the probability that the sum is more than 4.

(3)

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19 Spinner A has the numbers 1 to 3 and spinner B has the numbers 1 to 3. Each spinner is fair. Both are spun and the two scores are multiplied. Work out the probability that the product is exactly 9.

(3)

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20 A fair 3-sided spinner is numbered 1, 2, 3. Write down the possible outcomes for one spin.

(1)

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21 Two fair coins are tossed. How many outcomes are in the sample space?

(1)

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Mark scheme · 5.3 Listing Outcomes and Sample Space Diagrams: 1-hour Pack

Question 1

identify probability of green on one draw 2/6 = 1/3 and use replacement so probabilities multiply — **M1**

compute (1/3) x (1/3) = 1/9 — **M1**

final probability 1/9 cao — **A1**

Answer: **1/9**

Question 2

systematic listing with at least half correct — **M1**

H1, H2, H3, T1, T2, T3 cao — **A1**

Answer: **H1, H2, H3, T1, T2, T3**

Question 3

10 favourable outcomes out of 12 — **M1**

5/6 cao — **A1**

Answer: **5/6**

Question 4

list or table of 36 outcomes — **M1**

15 outcomes with a larger total — **M1**

5/12 cao — **A1**

Answer: **5/12**

Question 5

5 favourable outcomes out of 10 — **M1**

1/2 cao — **A1**

Answer: **1/2**

Question 6

systematic listing with at least half correct — **M1**

H1, H2, H3, H4, T1, T2, T3, T4 cao — **A1**

Answer: **H1, H2, H3, H4, T1, T2, T3, T4**

Question 7

6 favourable outcomes out of 15 — **M1**

2/5 cao — **A1**

Answer: **2/5**

Question 8

systematic listing with at least half correct — **M1**

H1, H2, T1, T2 cao — **A1**

Answer: **H1, H2, T1, T2**

Question 9

method of pairing each spinner colour with coin outcomes — **M1**

complete list: (red,H), (red,T), (blue,H), (blue,T), (green,H), (green,T) cao — **A1**

Answer: **(red,H), (red,T), (blue,H), (blue,T), (green,H), (green,T)**

Question 10

6 favourable outcomes out of 50 — **M1**

3/25 cao — **A1**

Answer: **3/25**

Question 11

3 favourable outcomes out of 25 — **M1**

3/25 cao — **A1**

Answer: **3/25**

Question 12

sample space or table with 12 outcomes — **M1**

2 favourable outcomes — **M1**

1/6 cao — **A1**

Answer: **1/6**

Question 13

15 favourable outcomes out of 30 — **M1**

1/2 cao — **A1**

Answer: **1/2**

Question 14

10 favourable outcomes out of 30 — **M1**

1/3 cao — **A1**

Answer: **1/3**

Question 15

5 x 4 — **M1**

20 cao — **A1**

Answer: **20**

Question 16

8 favourable outcomes out of 30 — **M1**

4/15 cao — **A1**

Answer: **4/15**

Question 17

24 equally likely outcomes — **M1**

18 outcomes with an even product — **M1**

3/4 cao — **A1**

Answer: **3/4**

Question 18

sample space or table with 15 outcomes — **M1**

9 favourable outcomes — **M1**

3/5 cao — **A1**

Answer: **3/5**

Question 19

sample space or table with 9 outcomes — **M1**

1 favourable outcomes — **M1**

1/9 cao — **A1**

Answer: **1/9**

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Question 20

1, 2, 3 all listed cao **B1**

Answer: **1, 2, 3**

Question 21

4 cao **B1**

Answer: **4**

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