5.2 Probability Scale and Simple Events: Test Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write each probability as a fraction, a decimal and a percentage.

(a) A coin is flipped. The probability of getting heads is 1/2. Write this as a decimal and a percentage. **(1)**

(b) A bag contains 1 red and 3 blue counters. The probability of drawing red is 1/4. Write this as a decimal and a percentage. **(1)**

(c) The probability of a particular student being chosen is 0.2. Write this as a fraction and a percentage. **(1)**

(d) A spinner has 5 equal sections. The probability of landing on a green section is 2/5. Write this as a decimal and a percentage. **(1)**

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2 A bag contains 3 purple and 7 orange sweets. One sweet is taken at random. What is the probability it is purple? Then give the probability it is not purple as a fraction.

(2)

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3 On a probability scale label the points for probabilities 0, 0.25, 0.5, 0.75 and 1 with the words impossible, unlikely, even chance, likely and certain respectively. Then state which of these is equivalent to 1/4.

(2)

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4 A fair six-sided die is rolled once and a spinner with 4 equal sections (labelled 1 to 4) is spun once. What is the probability the die shows an even number and the spinner shows 3? Give your answer as a fraction and a decimal.

(3)

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5 On a probability scale from 0 to 1, place these events at the correct point and state whether they are impossible, unlikely, even chance, likely or certain:

(a) Rolling a 7 on a fair six-sided die. **(1)**

(b) Choosing a blue marble from a bag with 2 blue and 1 red marble. **(1)**

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6 A biased die has probabilities of landing on the numbers 1 to 4 of 0.3, 0.4, 0.1 and p. Work out the value of p.

(2)

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7 A four-sided spinner lands on A, B, C or D. P(A) = x, P(B) = x, P(C) = x and P(D) = x. Work out the value of x, and then the probability that the spinner lands on B.

(3)

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8 A bag contains 10 counters. 7 of them are black and the rest are blue. A counter is taken at random.
Use one of the words impossible, unlikely, an even chance, likely or certain to describe the probability that the counter is black.

(1)

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9 A spinner can land on red, blue or green. The probability of red is 0.02 and the probability of blue is 0.2. Work out the probability of green.

(2)

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10 Write these probabilities in order from least likely to most likely: 0.05, 1/10, 10%, 0.2

(2)

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11 A spinner can land on red, blue or green. The probability of red is 0.13 and the probability of blue is 0.12. Work out the probability of green.

(2)

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12 A bag contains 6 black, 8 red, 9 yellow counters. One is taken at random. Write down the probability that it is yellow. Give your answer as a fraction in its simplest form.

(2)

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13 A fair six-sided die is rolled. Work out the probability of getting less than 3. Give your answer as a fraction in its simplest form.

(2)

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14 A bag contains 8 counters. 0 of them are black and the rest are red. A counter is taken at random.
Use one of the words impossible, unlikely, an even chance, likely or certain to describe the probability that the counter is black.

(1)

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15 A fair six-sided die is rolled once. Use the probability scale to label whether each outcome likelihood is impossible, unlikely, even chance, likely or certain, for:

(a) Roll a 6. **(1)**

(b) Roll an even number. **(1)**

(c) Roll a 0. **(1)**

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16 A bag contains 8 counters. 6 of them are red and the rest are blue. A counter is taken at random.
Use one of the words impossible, unlikely, an even chance, likely or certain to describe the probability that the counter is red.

.....

(1)

17 A bag contains 4 blue, 1 red and 5 green counters. A counter is chosen at random. What is the probability it is blue or red? Give your answer as a fraction.

(2)

18 A fair 8-sided die is numbered 1 to 8 and rolled once. Find each probability.

(a) P(rolling a multiple of 4) **(1)**

.....

(b) P(rolling a number greater than 8) **(1)**

.....

19 A fair spinner has 6 equal sections numbered 1 to 6. Find the probability that the spinner lands on an odd number or on the number 6. Give your answer as a fraction.

(2)

20 A biased spinner has three colours: red, blue and green. P(red) = 0.2 and P(blue) = 0.45. The spinner is spun once. Find P(green). Then find the probability that green occurs on each of two independent spins. Give your answer as a decimal.

(3)

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21 An event has a probability of 0. State whether the event is impossible, unlikely, even chance, likely or certain.

(1)

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22 Convert the probability 3/4 to a percentage.

(1)

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Mark scheme · 5.2 Probability Scale and Simple Events: Test Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

(a) 0.5 and 50% cao — **B1**

(a) Answer: **0.5, 50%**

(b) 0.25 and 25% cao — **B1**

(b) Answer: **0.25, 25%**

(c) 1/5 and 20% cao — **B1**

(c) Answer: **1/5, 20%**

(d) 0.4 and 40% cao — **B1**

(d) Answer: **0.4, 40%**

Question 2

purple = 3/10 identified — **M1**

not purple = 7/10 cao — **A1**

Answer: **3/10; 7/10**

Question 3

correct labels matched to 0, 0.25, 0.5, 0.75, 1 — **M1**

0.25 = 1/4 cao — **A1**

Answer: **0 impossible; 0.25 unlikely; 0.5 even chance; 0.75 likely; 1 certain. 1/4 = 0.25**

Question 4

probability die even = 1/2 and spinner 3 = 1/4 identified — **M1**

multiply independent probabilities 1/2 x 1/4 = 1/8 — **M1**

1/8 and 0.125 cao — **A1**

Answer: **1/8, 0.125**

Question 5

(a) 0 on scale and 'impossible' cao — **B1**

(a) Answer: **0; impossible**

(b) 2/3 on scale and 'likely' cao — **B1**

(b) Answer: **2/3; likely**

Question 6

1 - (0.3 + 0.4 + 0.1) — **M1**

0.2 cao — **A1**

Answer: **0.2**

Question 7

x + x + x + x = 1 — **M1**

x = 1/4 — **A1**

P(B) = 1/4 cao — **A1**

Answer: **x = 1/4, P(B) = 1/4**

Question 8

likely cao — **B1**

Answer: **likely**

Question 9

1 - 0.02 - 0.2 or 1 - 0.22 — **M1**

0.78 cao — **A1**

Answer: **0.78**

Question 10

convert to common form or compare decimals — **M1**

correct order: 0.05, 1/10, 10%, 0.2 cao — **A1**

Answer: **0.05, 1/10, 10%, 0.2**

Question 11

1 - 0.13 - 0.12 or 1 - 0.25 — **M1**

0.75 cao — **A1**

Answer: **0.75**

Question 12

9 out of 23 or 9/23 seen — **M1**

9/23 cao — **A1**

Answer: **9/23**

Question 13

identifies favourable outcomes 1, 2 or 2/6 — **M1**

1/3 cao — **A1**

Answer: **1/3**

Question 14

impossible cao — **B1**

Answer: **impossible**

Question 15

(a) 1/6 and 'unlikely' or 'less likely than even' accepted — **B1**

(a) Answer: **1/6; unlikely**

(b) 1/2 and 'even chance' cao — **B1**

(b) Answer: **1/2; even chance**

(c) 0 and 'impossible' cao — **B1**

(c) Answer: **0; impossible**

Question 16

likely cao — **B1**

Answer: **likely**

Question 17

add favourable outcomes 4+1 = 5 and divide by total 10 — **M1**

1/2 cao — **A1**

Answer: **1/2**

Question 18

(a) 1/4 cao oe (e.g. 2/8) — **B1**

(a) Answer: **1/4**

(b) 0 cao, with reason it is impossible — **B1**

(b) Answer: **0**

Question 19

identify favourable outcomes 1, 3, 5 and 6 (4 outcomes) — **M1**

2/3 cao oe (e.g. 4/6) — **A1**

Answer: **2/3**

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Question 20

find P(green) = 1 - 0.2 - 0.45	**M1**
multiply 0.35 x 0.35 for two independent spins	**M1**
0.1225 cao	**A1**

Answer: **P(green) = 0.35; P(green twice) = 0.1225**

Question 21

impossible cao	**B1**

Answer: **impossible**

Question 22

75% cao	**B1**

Answer: **75%**

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