5.2 Probability Scale and Simple Events: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A spinner can land on red, blue or green. The probability of red is 0.18 and the probability of blue is 0.25. Work out the probability of green.

(2)

2 The probability that a train is late is 1/20. Work out the probability that the train is not late.

(2)

3 A fair 12-sided spinner numbered 1 to 12 is rolled. Work out the probability of getting a square number. Give your answer as a fraction in its simplest form.

(2)

4 A bag contains 10 counters. 5 of them are purple and the rest are yellow. 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 purple.

(1)

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

(2)

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6 A bag contains 8 blue, 2 black, 7 white, 4 red counters. One is taken at random. Write down the probability that it is white. Give your answer as a fraction in its simplest form.

(2)

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7 A fair 8-sided spinner numbered 1 to 8 is rolled. Work out the probability of getting greater than 4. Give your answer as a fraction in its simplest form.

(2)

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8 A bag contains 9 black, 4 blue, 1 yellow, 9 purple 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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9 A biased die has probabilities of landing on the numbers 1 to 4 of 0.1, 0.3, 0.1 and p. Work out the value of p.

(2)

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10 A bag contains 3 red, 9 white, 7 yellow counters. One is taken at random. Write down the probability that it is white. Give your answer as a fraction in its simplest form.

(2)

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11 A spinner can land on red, blue or green. The probability of red is 0.05 and the probability of blue is 0.12. Work out the probability of green.

(2)

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12 A bag contains 12 counters. 9 of them are red and the rest are yellow. 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)

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13 A fair 12-sided spinner numbered 1 to 12 is rolled. Work out the probability of getting an even number. Give your answer as a fraction in its simplest form.

(2)

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14 A bag contains 10 counters. 2 of them are black and the rest are orange. 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 The probability that a train is late is 2/25. Work out the probability that the train is not late.

(2)

16 A spinner has 8 equal sections. 3 are blue and 5 are white. What is the probability of landing on white? Give your answer as a fraction in simplest form and as a percentage.

(2)

17 A bag contains 3 white, 9 blue marbles. One is taken at random. Write down the probability that it is blue. Give your answer as a fraction in its simplest form.

(2)

18 A bag contains 10 counters. 2 of them are yellow and the rest are purple. 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 yellow.

(1)

19 A fair six-sided die is rolled. Work out the probability of getting greater than 4. Give your answer as a fraction in its simplest form.

(2)

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20 One letter is chosen at random from the word STATISTICS. Work out the probability that it is the letter A.

(2)

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21 One letter is chosen at random from the word MISSISSIPPI. Work out the probability that it is the letter M.

(2)

---

22 A fair six-sided die is rolled. Work out the probability of getting not a 6. Give your answer as a fraction in its simplest form.

(2)

---

23 A bag contains 20 counters. 10 of them are green and the rest are white. 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 green.

(1)

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24 The probability that Ali wins a game is 0.6. Work out the probability that Ali does not win.

(2)

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25 A class has 10 pupils. Two are called Priya, three called Noah, and five called other names. A name is picked at random. What is the probability the name is not Priya? Give your answer as a fraction and decimal.

(2)

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26 A bag contains 8 orange, 3 blue, 8 black, 4 purple marbles. One is taken at random. Write down the probability that it is orange. Give your answer as a fraction in its simplest form.

(2)

---

27 A bag contains 8 counters. 0 of them are yellow and the rest are white. 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 yellow.

(1)

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28 A bag contains 3 red, 6 black marbles. One is taken at random. Write down the probability that it is black. Give your answer as a fraction in its simplest form.

(2)

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29 One letter is chosen at random from the word STATISTICS. Work out the probability that it is a vowel.

(2)

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30 One letter is chosen at random from the word PROBABILITY. Work out the probability that it is a vowel.

(2)

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31 One letter is chosen at random from the word PROBABILITY. Work out the probability that it is the letter R.

(2)

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32 A bag contains 12 counters. 12 of them are yellow and the rest are orange. 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 yellow.

(1)

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33 A fair six-sided die is rolled. Work out the probability of getting a prime number. Give your answer as a fraction in its simplest form.

(2)

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34 A bag contains 7 purple, 9 black, 5 yellow, 7 blue marbles. 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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35 A bag contains 8 counters. 6 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)

36 A bag contains 2 yellow, 1 green marbles. One is taken at random. Write down the probability that it is yellow. Give your answer as a fraction in its simplest form.

(2)

37 A bag contains 1 black, 1 blue counters. One is taken at random. Write down the probability that it is blue. Give your answer as a fraction in its simplest form.

(2)

38 A bag contains 1 green, 6 blue, 6 red counters. One is taken at random. Write down the probability that it is red. Give your answer as a fraction in its simplest form.

(2)

39 The probability that Ali wins a game is 0.5. Work out the probability that Ali does not win.

(2)

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40 One letter is chosen at random from the word ASSESSMENT. Work out the probability that it is a vowel.

(2)

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41 A bag contains 8 counters. 4 of them are blue and the rest are yellow. 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 blue.

(1)

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42 One letter is chosen at random from the word PARALLELOGRAM. Work out the probability that it is a vowel.

(2)

---

43 A bag contains 10 counters. 2 of them are orange and the rest are green. 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 orange.

(1)

---

44 A bag contains 12 counters. 12 of them are purple and the rest are orange. 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 purple.

(1)

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45 A bag contains 12 counters. 9 of them are red and the rest are purple. 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)

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46 A bag contains 5 purple, 5 black, 5 green, 4 white counters. One is taken at random. Write down the probability that it is white. Give your answer as a fraction in its simplest form.

(2)

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47 A charity raffle sells 200 tickets. Grace buys 8 tickets. One winning ticket is drawn at random.

(a) Find the probability that Grace wins. **(1)**

.....

(b) Grace buys 12 more tickets, so she now holds 20 tickets in total. Find her new probability of winning, giving your answer as a fraction in simplest form. **(2)**

.....

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48 A bag contains only green and yellow counters. The probability of picking a green counter at random is 0.35. There are 60 counters in the bag. Find the number of yellow counters in the bag.

(3)

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49 A survey of 50 students asked whether they walk or cycle to school. 18 students cycle and the rest walk. A student is picked at random from those surveyed. Find the probability that the student walks. Give your answer as a fraction in simplest form and as a percentage.

(3)

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50 A fair six-sided die numbered 1 to 6 is rolled. Write the probability of rolling a number less than 1.

(1)

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51 A spinner has 5 equal sections coloured red, blue, green, yellow and purple. Find the probability of NOT landing on red. Give your answer as a fraction and a percentage.

(2)

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Mark scheme · 5.2 Probability Scale and Simple Events: 2-hour Pack

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

Question 1

1 - 0.18 - 0.25 or 1 - 0.43	M1
0.57 cao	A1

Answer: **0.57**

Question 2

1 - 1/20	M1
19/20 cao	A1

Answer: **19/20**

Question 3

identifies favourable outcomes 1, 4, 9 or 3/12	M1
1/4 cao	A1

Answer: **1/4**

Question 4

an even chance cao	B1

Answer: **an even chance**

Question 5

1 - (0.3 + 0.3 + 0.1)	M1
0.3 cao	A1

Answer: **0.3**

Question 6

7 out of 21 or 7/21 seen	M1
1/3 cao	A1

Answer: **1/3**

Question 7

identifies favourable outcomes 5, 6, 7, 8 or 4/8	M1
1/2 cao	A1

Answer: **1/2**

Question 8

1 out of 23 or 1/23 seen	M1
1/23 cao	A1

Answer: **1/23**

Question 9

1 - (0.1 + 0.3 + 0.1)	M1
0.5 cao	A1

Answer: **0.5**

Question 10

9 out of 19 or 9/19 seen	M1
9/19 cao	A1

Answer: **9/19**

Question 11

1 - 0.05 - 0.12 or 1 - 0.17	M1
0.83 cao	A1

Answer: **0.83**

Question 12

likely cao	B1

Answer: **likely**

Question 13

identifies favourable outcomes 2, 4, 6, 8, 10, 12 or 6/12	M1
1/2 cao	A1

Answer: **1/2**

Question 14

unlikely cao	B1

Answer: **unlikely**

Question 15

1 - 2/25	M1
23/25 cao	A1

Answer: **23/25**

Question 16

fraction 5/8 identified	M1
5/8 and 62.5% cao	A1

Answer: **5/8, 62.5%**

Question 17

9 out of 12 or 9/12 seen	M1
3/4 cao	A1

Answer: **3/4**

Question 18

unlikely cao	B1

Answer: **unlikely**

Question 19

identifies favourable outcomes 5, 6 or 2/6	M1
1/3 cao	A1

Answer: **1/3**

Question 20

1 out of 10	M1
1/10 cao	A1

Answer: **1/10**

Question 21

1 out of 11	M1
1/11 cao	A1

Answer: **1/11**

Question 22

identifies favourable outcomes 1, 2, 3, 4, 5 or 5/6	M1
5/6 cao	A1

Answer: **5/6**

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Question 23

an even chance cao **B1**

Answer: **an even chance**

Question 24

1 - 0.6 **M1**

0.4 cao **A1**

Answer: **0.4**

Question 25

use complement: 1 - 2/10 or count 8/10 **M1**

4/5 and 0.8 cao **A1**

Answer: **4/5, 0.8**

Question 26

8 out of 23 or 8/23 seen **M1**

8/23 cao **A1**

Answer: **8/23**

Question 27

impossible cao **B1**

Answer: **impossible**

Question 28

6 out of 9 or 6/9 seen **M1**

2/3 cao **A1**

Answer: **2/3**

Question 29

3 vowels out of 10 letters **M1**

3/10 cao **A1**

Answer: **3/10**

Question 30

4 vowels out of 11 letters **M1**

4/11 cao **A1**

Answer: **4/11**

Question 31

1 out of 11 **M1**

1/11 cao **A1**

Answer: **1/11**

Question 32

certain cao **B1**

Answer: **certain**

Question 33

identifies favourable outcomes 2, 3, 5 or 3/6 **M1**

1/2 cao **A1**

Answer: **1/2**

Question 34

5 out of 28 or 5/28 seen **M1**

5/28 cao **A1**

Answer: **5/28**

Question 35

likely cao **B1**

Answer: **likely**

Question 36

2 out of 3 or 2/3 seen **M1**

2/3 cao **A1**

Answer: **2/3**

Question 37

1 out of 2 or 1/2 seen **M1**

1/2 cao **A1**

Answer: **1/2**

Question 38

6 out of 13 or 6/13 seen **M1**

6/13 cao **A1**

Answer: **6/13**

Question 39

1 - 0.5 **M1**

0.5 cao **A1**

Answer: **0.5**

Question 40

3 vowels out of 10 letters **M1**

3/10 cao **A1**

Answer: **3/10**

Question 41

an even chance cao **B1**

Answer: **an even chance**

Question 42

5 vowels out of 13 letters **M1**

5/13 cao **A1**

Answer: **5/13**

Question 43

unlikely cao **B1**

Answer: **unlikely**

Question 44

certain cao **B1**

Answer: **certain**

Question 45

likely cao **B1**

Answer: **likely**

Question 46

4 out of 19 or 4/19 seen **M1**

4/19 cao **A1**

Answer: **4/19**

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Question 47

(a) 1/25 cao oe (e.g. 8/200)	**B1**
(a) Answer: **1/25**	
(b) form fraction 20/200	**M1**
(b) 1/10 cao	**A1**
(b) Answer: **1/10**	

Question 48

find number of green counters, 0.35 x 60	**M1**
subtract from the total, 60 - 21	**M1**
39 cao	**A1**
Answer: **39**	

Question 49

find number who walk, 50 - 18 = 32	**M1**
form fraction 32/50 and simplify	**M1**
16/25 and 64% cao	**A1**
Answer: **16/25, 64%**	

Question 50

0 cao, with reason it is impossible	**B1**
Answer: **0**	

Question 51

use complement: 4 sections out of 5 are not red	**M1**
4/5 and 80% cao	**A1**
Answer: **4/5, 80%**	

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