2.71 Probability Depth: 30-minute Pack

GL ASSESSMENT EP.M94 · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A fair six-sided dice is rolled once. What is the probability that the score is an even number?

- ☐ A) 1/6
- ☐ B) 1/3
- ☐ C) 1/2
- ☐ D) 2/3

2 A bag contains 4 red counters and 6 blue counters, and no others. A counter is picked at random. What is the probability that it is red? Give your answer as a fraction in its simplest form.

(1)

3 A fair spinner has 5 equal sections coloured red, blue, green, yellow and purple. What is the probability that it lands on a colour that is not red? Give your answer as a fraction.

(1)

4 The probability that a train arrives on time is 0.72. Find the probability that the train does not arrive on time.

(2)

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5 A spinner is divided into 10 equal sections numbered 1 to 10. It is spun once. What is the probability that the spinner lands on a multiple of 3? Give your answer as a fraction in its simplest form.

(2)

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6 The probability that a certain seed germinates is 3/8. If 96 seeds are planted, how many would be expected to germinate?

(2)

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7 A letter is picked at random from the word MATHEMATICS. What is the probability that the letter is M? Give your answer as a fraction in its simplest form.

(2)

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8 In a class of 30 pupils, 18 walk to school. A pupil is picked at random from the class. Find the probability, as a decimal, that the pupil does not walk to school.

(2)

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9 A box of raffle tickets contains only yellow, pink and white tickets. The probability of picking a yellow ticket is 0.3 and the probability of picking a pink ticket is 0.45. Find the probability of picking a white ticket.

(2)

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10 The probability that a spinner lands on the colour green is 1/6. The spinner is spun 240 times. How many times would you expect it to land on green?

(2)

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11 A card is picked at random from a set of 20 cards numbered 1 to 20. What is the probability that the number is a factor of 20?

- ☐ A) 1/5
- ☐ B) 1/4
- ☐ C) 3/10
- ☐ D) 2/5

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12 Two fair coins are flipped at the same time. List all the possible outcomes, then find the probability that both coins land on heads.

(3)

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13 A fair six-sided dice is rolled and a fair coin is flipped at the same time. Find the probability of getting a 6 on the dice and heads on the coin.

(3)

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14 A spinner has three equal sections numbered 1, 2 and 3. A fair coin is flipped at the same time as the spinner is spun. List all the possible outcomes, then find the probability of getting an odd number on the spinner and heads on the coin.

(3)

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15 A bag of counters is used for a probability experiment.

(a) A bag contains counters that are either black or white only. The probability of picking a black counter is 0.6. There are 18 black counters in the bag. How many counters are there in the bag altogether? **(2)**

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(b) 5 more white counters are added to the bag, and no counters are removed or added of any other colour. Find the new probability of picking a black counter, giving your answer as a fraction in its simplest form. **(3)**

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Mark scheme · 2.71 Probability Depth: 30-minute Pack

Question 1

C (1/2) cao **B1**

Answer: C) 1/2

Question 2

2/5 cao **B1**

Answer: 2/5

Question 3

4/5 cao **B1**

Answer: 4/5

Question 4

recognises the two outcomes have probabilities that sum to 1 (oe) **M1**

0.28 cao **A1**

Answer: 0.28

Question 5

identifies the multiples of 3 from 1 to 10 as 3, 6 and 9 (oe) **M1**

3/10 cao **A1**

Answer: 3/10

Question 6

96 / 8 = 12 (oe) **M1**

36 cao **A1**

Answer: 36

Question 7

the word MATHEMATICS has 11 letters, of which 2 are M (oe) **M1**

2/11 cao **A1**

Answer: 2/11

Question 8

30 - 18 = 12 (pupils who do not walk) **M1**

0.4 cao **A1**

Answer: 0.4

Question 9

0.3 + 0.45 = 0.75 (oe) **M1**

0.25 cao **A1**

Answer: 0.25

Question 10

expected frequency = probability x number of trials (oe) **M1**

40 cao **A1**

Answer: 40

Question 11

lists the factors of 20 as 1, 2, 4, 5, 10 and 20 (oe) **M1**

C (3/10) cao **A1**

Answer: C) 3/10

Question 12

lists all 4 outcomes: HH, HT, TH, TT (oe) **M1**

identifies 1 outcome (HH) as both heads (oe) **M1**

1/4 cao **A1**

Answer: 1/4

Question 13

total number of equally likely outcomes = 6 x 2 = 12 (oe) **M1**

identifies exactly 1 outcome matches (6, heads) (oe) **M1**

1/12 cao **A1**

Answer: 1/12

Question 14

lists all 6 outcomes: (1,H), (1,T), (2,H), (2,T), (3,H), (3,T) (oe) **M1**

identifies the 2 favourable outcomes: (1,H) and (3,H) (oe) **M1**

1/3 cao **A1**

Answer: 1/3

Question 15

(a) 18 / 0.6 (oe) **M1**

(a) 30 cao **A1**

(a) Answer: 30

(b) 30 - 18 = 12 white counters originally (ft from a) **M1**

(b) 12 + 5 = 17 white counters, so 18 + 17 = 35 counters in total (oe) **M1**

(b) 18/35 cao **A1**

(b) Answer: 18/35

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