5.8 Mixed Probability Problem Set: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Lily spins a spinner 200 times and it lands on blue 182 times. Work out the relative frequency of blue. Give your answer as a fraction in its simplest form.

(2)

2 A bag contains 2 yellow counters and 4 blue counters. A counter is taken at random, its colour is noted and it is put back. A second counter is then taken at random.
Work out the probability that at least one of the counters is yellow.

(4)

3 50 people were asked about their choice. The two-way table shows the results. Boys: Art 6, Music 5, Drama 19; Girls: Art 12, Music 4, Drama 4.
One person is chosen at random. Work out the probability that the person is in the group Girls and chose Drama. Give your answer as a fraction in its simplest form.

(2)

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4 53 people were asked about their choice. The two-way table shows the results. Boys: Art 12, Music 4, Drama 16; Girls: Art 3, Music 8, Drama 10.
How many people chose Music?

(1)

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5 In a class of 48 pupils, 22 play football, 26 play hockey and 2 play both football and hockey.
One pupil is chosen at random. Work out the probability that the pupil plays neither football nor hockey.

(4)

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6 67 people were asked about their choice. The two-way table shows the results. Adults: Pizza 11, Pasta 13, Salad 3; Children: Pizza 12, Pasta 18, Salad 10.
One person is chosen at random. Work out the probability that the person is in the group Children and chose Salad. Give your answer as a fraction in its simplest form.

(1)

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7 56 people were asked about their choice. The two-way table shows the results. Year 7: bus 3, walk 15, car 5; Year 8: bus 13, walk 14, car 6.
How many people chose walk?

(1)

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8 64 people were asked about their choice. The two-way table shows the results. Adults: Pizza 15, Pasta 14, Salad 3; Children: Pizza 11, Pasta 3, Salad 18.
One of the Adults is chosen at random. Work out the probability that this person chose Pizza. Give your answer as a fraction in its simplest form.

(2)

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9 In a class of 33 pupils, 20 play cats, 11 play dogs and 3 play both cats and dogs.
How many pupils play neither cats nor dogs?

(3)

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10 In a class of 37 pupils, 13 play football, 16 play hockey and 4 play both football and hockey.
How many pupils play football only?

(2)

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11 The probability that Isla wins a game of chess is 0.3. Isla plays two games. The results are independent. Work out the probability that Isla wins both games.

(2)

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12 In a class of 60 pupils, 27 play cats, 30 play dogs and 7 play both cats and dogs. One pupil is chosen at random. Work out the probability that the pupil plays neither cats nor dogs.

(4)

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13 Lily spins a spinner 20 times and it lands on blue 10 times. Work out the relative frequency of blue. Give your answer as a fraction in its simplest form.

(2)

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14 Events A and B are independent. P(A) = 1/3 and P(B) = 7/9. Work out the probability that both A and B happen.

(2)

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15 24 cards are numbered 1 to 24. 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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16 A bag contains 1 green counters and 4 blue counters. A counter is taken at random, its colour is noted and it is put back. A second counter is then taken at random.
Work out the probability that the two counters are different colours.

(4)

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17 Events A and B are independent. P(A) = 2/5 and P(B) = 5/8. Work out the probability that both A and B happen.

(2)

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18 Lily spins a spinner 100 times and it lands on blue 92 times. Work out the relative frequency of blue. Give your answer as a fraction in its simplest form.

(2)

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19 76 people were asked about their choice. The two-way table shows the results. Year 7: bus 6, walk 11, car 17; Year 8: bus 17, walk 12, car 13.
One of the Year 7 is chosen at random. Work out the probability that this person chose bus. Give your answer as a fraction in its simplest form.

(3)

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20 Two dice are rolled. What is the probability that the total is 7?

(2)

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Mark scheme · 5.8 Mixed Probability Problem Set: 1-hour Pack

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

Question 1

182/200	M1
91/100 cao	A1

Answer: **91/100**

Question 2

P(both blue) = 2/3 x 2/3	M1
4/9 found	M1
1 - P(both not yellow)	M1
5/9 cao	A1

Answer: **5/9**

Question 3

4/50	M1
2/25 cao	A1

Answer: **2/25**

Question 4

12 cao	B1

Answer: **12**

Question 5

20 football only, 24 hockey only, 2 both	M1
46 play at least one	M1
48 - 46	M1
1/24 cao	A1

Answer: **1/24**

Question 6

10/67 cao	B1

Answer: **10/67**

Question 7

29 cao	B1

Answer: **29**

Question 8

total for Adults = 32	M1
15/32 cao	A1

Answer: **15/32**

Question 9

20 + 11 - 3 = 28	M1
33 - 28	M1
5 cao	A1

Answer: **5**

Question 10

13 - 4	M1
9 cao	A1

Answer: **9**

Question 11

0.3 x 0.3	M1
0.09 cao	A1

Answer: **0.09**

Question 12

20 cats only, 23 dogs only, 7 both	M1
50 play at least one	M1
60 - 50	M1
1/6 cao	A1

Answer: **1/6**

Question 13

10/20	M1
1/2 cao	A1

Answer: **1/2**

Question 14

1/3 x 7/9	M1
7/27 cao	A1

Answer: **7/27**

Question 15

10 favourable outcomes out of 24	M1
5/12 cao	A1

Answer: **5/12**

Question 16

1/5 x 4/5 seen	M1
considers both orders: green then blue and blue then green	M1
adds the two probabilities	M1
8/25 cao	A1

Answer: **8/25**

Question 17

2/5 x 5/8	M1
1/4 cao	A1

Answer: **1/4**

Question 18

92/100	M1
23/25 cao	A1

Answer: **23/25**

Question 19

total for Year 7 = 34	M1
6/34	M1
3/17 cao	A1

Answer: **3/17**

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Question 20

recognition of 6 favourable outcomes out of 36 **M1**

6/36 = 1/6 cao **A1**

Answer: **1/6**

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