5.8 Mixed Probability Problem Set: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A jar contains 5 orange sweets and 7 lemon sweets. Two sweets are eaten at random without replacement. Find the probability both sweets are the same flavour.

(3)

2 A fair coin is flipped until heads appears. What is the probability that heads appears for the first time on the third flip?

(4)

3 A fair six-sided die is rolled once. What is the probability of rolling an even number?

(2)

4 Lily spins a spinner 40 times and it lands on blue 33 times. Work out the relative frequency of blue. Give your answer as a fraction in its simplest form.

(1)

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5 A bag contains 1 purple counters and 3 red 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 purple.

(4)

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6 24 cards are numbered 1 to 24. 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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7 A spinner is split into 8 equal sectors. Two adjacent sectors are shaded. Write down the probability of landing on a shaded sector.

(2)

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8 A bag contains 4 green, 2 yellow and 4 black counters. One counter is chosen at random. Calculate the probability that the counter is not yellow.

(2)

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9 In an experiment a drawing pin is dropped 20 times and lands point up 9 times. Use this to estimate how many times it will land point up in 400 drops.

(3)

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Mark scheme · 5.8 Mixed Probability Problem Set: 30-minute Pack

Question 1

probability both orange = (5/12)*(4/11) and both lemon = (7/12)*(6/11) recognised	M1
sum of probabilities computed: (20/132)+(42/132) = 62/132	M1
62/132 = 31/66 cao	A1

Answer: **31/66**

Question 2

recognition that first two flips must be tails with probability (1/2)*(1/2)	M1
recognition third flip must be heads with probability 1/2	M1
product method used: $(1/2)^3$	M1
1/8 cao	A1

Answer: **1/8**

Question 3

correct identification of 3 favourable outcomes (2,4,6) out of 6 or equivalent method	M1
1/2 or 3/6 cao	A1

Answer: **1/2**

Question 4

33/40 cao	B1

Answer: **33/40**

Question 5

P(both red) = 3/4 x 3/4	M1
9/16 found	M1
1 - P(both not purple)	M1
7/16 cao	A1

Answer: **7/16**

Question 6

12 favourable outcomes out of 24	M1
1/2 cao	A1

Answer: **1/2**

Question 7

recognition that probability = shaded sectors / total sectors	M1
2/8 = 1/4 cao	A1

Answer: **1/4**

Question 8

correct total count 10 and recognition of non-yellow count 8	M1
8/10 = 4/5 cao	A1

Answer: **4/5**

Question 9

relative frequency 9/20	M1
9/20 x 400	M1
180 cao	A1

Answer: **180**

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