5.5 Two-Way Tables and Frequency Trees: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Stretch: A two-way table for 180 students shows whether they study languages and whether they play a sport. 110 study a language, 85 play a sport. 50 study a language and play a sport. How many students study a language but do not play a sport? Also give the probability that a randomly chosen student studies a language but does not play a sport.

(4)

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2 Complete the missing entry in this two-way table. A survey of 50 people recorded whether they cycle to school and whether they live in town or countryside.

	Cycle	Do not cycle	Total
Town	12	18	30
Countryside	6	?	20
Total	18	32	50

Find the missing value marked '?'.

(2)

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3 The numbers of pets owned by 15 pupils are: 6, 4, 2, 5, 5, 3, 2, 5, 2, 5, 2, 3, 2, 2, 3.
Complete a frequency table to find how many pupils own 4 pets.

(2)

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4 79 people were asked about their choice. The two-way table shows the results. Adults: Pizza 8, Pasta 15, Salad 16; Children: Pizza 14, Pasta 17, Salad 9.
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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5 There are 240 pupils in Year 8. 1/6 of them are in the school choir. 3/6 of the choir members play an instrument. Work out how many pupils are in the choir and play an instrument.

(3)

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6 The numbers of pets owned by 14 pupils are: 7, 6, 6, 4, 8, 4, 7, 6, 8, 8, 5, 4, 5, 5.
What fraction of the pupils own exactly 4 pets? Give your answer in its simplest form.

(2)

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7 A frequency tree shows whether pupils own a pet and, if so, whether it is a cat or dog. 60 pupils were asked. From the tree: 40 own a pet; of those 40, 25 own a dog and the rest own a cat.

Write down the number of pupils who own a cat and the probability that a randomly chosen pupil owns a dog.

(2)

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8 A frequency tree for 90 students gives: 54 take a language; of them 20 take Spanish and the rest take French. Of the students who do not take a language, 18 take Art. Calculate the probability that a randomly chosen student takes French and express your answer as a fraction in simplest form.

(3)

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9 A survey of 120 shoppers found that 70 bought fruit, 55 bought vegetables, and 25 bought both fruit and vegetables. Find the number of shoppers who bought neither fruit nor vegetables.

(3)

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Mark scheme · 5.5 Two-Way Tables and Frequency Trees: 30-minute Pack

Question 1

language only = 110 - 50 = 60	M1
form probability = 60/180	M1
simplify probability to 1/3	M1
language only 60 and probability 1/3 cao	A1

Answer: **60; 1/3**

Question 2

use total for countryside: 20 - 6 = 14 or use column total 32 - 18 = 14	M1
14 cao	A1

Answer: **14**

Question 3

systematic counting or a tally of the data	M1
1 cao	A1

Answer: **1**

Question 4

total for Adults = 39	M1
8/39 cao	A1

Answer: **8/39**

Question 5

1/6 x 240 = 40	M1
3/6 x 40	M1
20 cao	A1

Answer: **20**

Question 6

frequency 3 found	M1
3/14 cao	A1

Answer: **3/14**

Question 7

cat owners = 40 - 25 = 15 cao	B1
probability dog = 25/60 = 5/12 cao	B1

Answer: **15; 5/12**

Question 8

find French = 54 - 20 = 34	M1
use total 90 to form probability 34/90	M1
17/45 cao	A1

Answer: **17/45**

Question 9

fruit only = 70 - 25 = 45 or vegetables only = 55 - 25 = 30	M1
bought at least one = 45 + 30 + 25 = 100 oe (or 70+55-25)	M1
20 cao	A1

Answer: **20**

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