Q1.

(a) 450 in Drink coffee Yes

B1

50 in Drink coffee No

ft 500 − their 450

B1ft

90 in At least three cups Yes

ft their 450 ÷ 5

B1ft

360 in At least three cups No

ft their 450 − their 90

B1ft

Additional Guidance

For 90 ft , their 450 ÷ 5 must be truncated or rounded up to the nearest whole number

For 360 ft, their 450 − their 90 must give a positive integer

Accept unambiguous values elsewhere but diagram values take precedence

Correct relative frequencies seen, withhold first B1 that would have been awarded

eg $\frac{400}{500}, \frac{100}{500}, \frac{80}{400}, \frac{320}{400}$

B0 B0ft B1ft B1ft

eg $\frac{400}{500}, \frac{100}{500}, \frac{80}{500}, \frac{320}{500}$

B0 B0ft B0ft B0ft

Do not accept probabilities

eg $\frac{9}{10}, \frac{1}{10}, \frac{4}{5}, \frac{1}{5}$

B0

eg 0.9, 0.1, 0.8, 0.2

B0

(b) **Alternative method 1**

$\frac{\text{their } 90}{500}$ (or partially simplified)

oe e.g. decimal

ft or correct

B1ft

$\frac{9}{50}$

ft their unsimplified fraction fully simplified $\frac{9}{50}$ *scores B1B1*

B1ft

Alternative method 2

$\frac{9}{10} \times \frac{1}{5}$

oe e.g. 0.9 × 0.2 or 0.18

M1

$\frac{9}{50}$

A1

Additional Guidance

$\frac{90}{500} = \frac{18}{100}$

B1B0

$\frac{80}{500} = \frac{4}{25}$ (with 80 in part (a) then ft)

B1ftB1ft

$\frac{80}{500} = \frac{4}{25}$ (with 80 not in part (a) so not ft but then simplest form correct)

B0B1ft

$\frac{80}{500} = \frac{8}{50}$ (with 80 not in part (a) so not ft and simplest form not correct)

B0B0

$\frac{45}{250}$

B1B0

80 in (a), $\frac{8}{50}$ here

B1B0

$\frac{90}{400} = \frac{9}{40}$

B0B1ft

$\frac{500}{90} = \frac{50}{9}$

B0B1ft

Do not accept 18% for first mark

[6]

Q2.

$\frac{17}{25}$

or 25 − 12 − 5

or 8

oe

M1

$\frac{8}{25}$

oe

A1

[2]

Q3.

1 – (0.2 + 0.3 + 0.15) or 0.65

oe eg 65%

M1

0.35

oe eg 35%

A1

Additional Guidance

0.2 + 0.3 + 0.15 = 0.2
0.8

Answer follows through

M1
A0

0.2 + 0.3 + 0.15 = 0.55
1 – 0.55 = 0.25

Method even though answer wrong

M1
A0

0.2 + 0.3 + 0.15 = 0.55
0.35

No method seen and answer does not follow through

M0
A0

0.65
0.45

M1
A0

Answer only of 0.65

M1
A0

0.2
0.8

No addition seen

M0

Embedded answer 0.2 + 0.3 + 0.15 + 0.35 = 1

Answer follows through

M1, A0

Embedded answer 0.2 + 0.3 + 0.15 + 0.8 = 1
Answer 0.8

M1, A0

[2]

Q4.

(a) 1 − (0.3 + 0.25 + 0.1)

M1

0.35

oe

A1

(b) 0.4

oe

B1

[3]

Q5.

(a) 0.16 + 0.24 + 0.16 + 0.24
or 0.8(0)

M1

0.2

oe

A1

(b) 0.4(0)

B1

(c) **Alternative method 1**

4 ÷ 0.16 or
1 number ↔ 0.04

oe

M1

25

oe

A1

Alternative method 2

$\frac{0.24}{0.16}$ × 4 or 6 or

$\frac{\text{their } x}{0.16}$ × 4 or 5

oe

Attempt to work out how many prime numbers in the range
$361 \leq n < 390$ or $421 \leq n < 450$ or $331 \leq n < 360$

M1

25

A1

[5]

Q6.

(a) $\frac{28}{40}$ or 70% or 0.7 *oe*

B1

(b) their $\frac{28}{40}$ × 10 (= 7)

ft their $\frac{28}{40}$ from part (a) × 10 for red

or

$\frac{9}{40}$ × 10 (= 2(.25) or 2)

oe 28 ÷ 4 or 9 ÷ 4 or 3 ÷ 4

or

$\frac{3}{40}$ × 10 (= 0.75 or 1)

M1

7 and 2 and 1

Must give integer answers

A1

[3]

Q7.

0.4

B1

[1]

Q8.

One correct pair

oe

B1

HH HT TH TT

Strand (ii)

oe

SC1 all four possible single toss outcomes (10p H, 10p T, 2p H, 2p T)

Q1

[2]

Q9.

(a) (ML, MK, DS, DL, DK, WS, WL, WK

B2 at least five more of the eight possible options seen

B1 2 - 4 more of the eight possible options seen

B3

(b) their $\frac{1}{9}$

oe

B1 ft

[4]

Q10.

(a) 0.8

B1

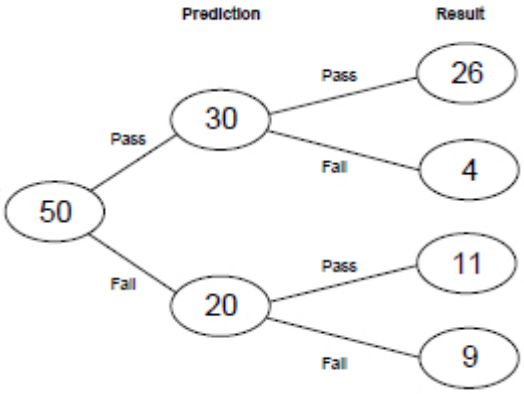
(b) $\frac{2}{6}$

B1

[2]

Q11.

Fully correct



B1 20 and 11 in correct positions

B2

[2]

Q12.

1 − 0.28 or 0.72
or
0.28 × 2 or 0.56

M1

1 − 0.28 − (2 × 0.28)
or their 0.72 − (2 × 0.28)
or 1 − 0.28 − their 0.56 or 0.16

M1

0.08

oe

A1

[3]

Q13.

(a) 90 and 213

B1

71

ft their 90 − 19

or 400 − their 213 − 97 − 19

B1ft

(b) $\frac{97 \div 19}{400}$ or $\frac{97}{400}$ or $\frac{19}{400}$
or 97 + 19 or 116
oe

M1

$\frac{116}{400}$ or $\frac{58}{200}$ or $\frac{29}{100}$
or 0.29
or 29%

A1

Additional Guidance

oe example $\frac{310}{400} \times \frac{97}{310} + \frac{90}{400} \times \frac{19}{90}$

M1

(c) 97 + 19 × 2
or 97 + 38
or 135

M1

(their 135 + 25) ÷ 400 or 0.4
or 40

M1dep

£0.40 or 40p
Must have correct units and correct money notation
£0.40p M1M1A0

A1

[7]

Q14.

(a) 7 + 8 or 15

M1

$\frac{15}{20}$
May be implied

A1

$\frac{3}{4}$
ft their fraction siimplified to lowest terms

B1ft

(b) 8 + 1 or 9 seen or implied

M1

$\frac{9}{20}$ *oe*

SC1 $\frac{11}{20}$ *oe*

A1

[5]

Q15.

57 in Away

B1

117 in Home Male

B1

66 in Home Female

ft 183 − their 117

B1ft

12 in Away Female

ft their 57 − 45

SC1 total of four Male and Female sections is 240

B1ft

[4]

Q16.

(a) LPM

PLM

PML Any order

MLP

MPL

B1 for at least two more correct orders

B2

(b) $\frac{2}{6}$

oe $\frac{1}{3}$

ft their (a) if at least one extra order given

B1ft

[3]

Q17.

(a) $\frac{3}{8}$

oe

B1 for numerator 3 or denominator 8

B1 3 out of 8

B0 3 : 8

B2

(b) $\frac{7}{8}$

oe

B1 for numerator 7 or denominator 8

B1 for 7 out of 8

B0 7 : 8

B1 for (1 −) $\frac{1}{8}$

B2

[4]

Q18.

(Outline of suitable table/sample space diagram and) begins to list outcomes

At least 5

M1

(shows all) 25 outcomes or indicates there are 25 outcomes
(eg sample space diagram)

Ignore any repeats or extras

Sight of 25 outcomes implies M2

M1

Identifies (the correct) 10 outcomes

No more than one repeat or error or omission unless recovered.

M1

$\frac{10}{25}$

oe eg 0.4

A1

Logical and organised approach

Q1

Strand (ii)

*Award if M3 given **and** a clear and organised approach is used*

Do not award if answer only given

Alternative method

$\frac{1}{5} \times \frac{1}{5} \left(= \frac{1}{25} \right)$

oe (for any outcome)

M1

$\frac{1}{5} \times \frac{1}{5} \left(= \frac{2}{25} \right)$ or $\frac{1}{5} \times \frac{3}{5} \left(= \frac{3}{25} \right)$ or $\frac{1}{5} \times \frac{4}{5} \left(= \frac{4}{25} \right)$

oe

M1

Their $\frac{1}{25}$ + their $\frac{2}{25}$ + their $\frac{3}{25}$ + their $\frac{4}{25}$

oe allow one error

M1

$\frac{10}{25}$

oe eg 0.4

A1

Logical and organised approach

Strand (ii)

*Award if M3 given **and** a clear and organised approach is used*

Do not award if answer only given

Q1

[5]

Q19.

(a) 1 − (0.41 + 0.24 + 0.22 + 0.04)

1 − 0.91 oe

Allow 100 − 91

M1

0.09

Accept 9% or $\frac{9}{100}$

A1

(b) 0.41 × 8000 (= 3280)

(1 − 0.41) × 8000 (= 4720) oe

M1

15 000 − their 3280

their 4720 + (15 000 − 8000)

M1 dep

11 720

11 720

SC2 13 080 or 13 240 or 14 280 or 14 680

A1

[5]

Q20.

(a) $\frac{8}{16}$

oe

B1 $\frac{n}{16}$ *where 1 ≤ n ≤ 15 and n an integer*

B1 $\frac{8}{n}$ *where n > 8 and n an integer*

SC1 evens, even chance, even, 8 out of 16, 8 in 16

B2

(b) Any two multiples of 3

3, 6, 9, 12, … (not 0)

B1 one multiple of 3

SC1 two or more correct lists of counters with no totals

SC1 two different fractions both equivalent to $\frac{1}{3}$.

B2

(c) Any two multiples of 4 greater than 10

12, 16, 20, 24, …

B1 one multiple of 4 greater than 10

SC1 4 ***and*** *8*

SC1 two or more correct lists of counters with no totals

B2

[6]

Q21.

(a) $\frac{2}{3} \times 40$ *oe*

$\frac{1}{3} \times 40$

M1

26.(…) or 26 or 27

13.(…) or 13

A1

their 27 **and** No

or

their 13 **and** No

Strand (iii)

Supporting answers with explanation and evidence

Must have scored M1

Q1 ft

Alternative method

Can swim:

$\frac{24}{40}$ oe or 60% or 0.6

Proportions in the same format

eg 60% **and** 66.(...)% or 67%

or 0.6 **and** 0.66(…) or 0.67

or two comparable fractions

equivalent to $\frac{24}{40}$ **and** $\frac{2}{3}$

eg $\frac{72}{120}$ **and** $\frac{80}{120}$

or $\frac{9}{15}$ **and** $\frac{10}{15}$

Cannot swim:
$\frac{16}{40}$ *oe or 40% or 0.4*

M1

Proportions in the same format
*eg 40% **and** 33.(…)%*
*or 0.4 **and** 0.33(…)*
or two comparable fractions
equivalent to $\frac{16}{40}$ ***and*** $\frac{1}{3}$
eg $\frac{48}{120}$ ***and*** $\frac{40}{120}$
or $\frac{6}{15}$ ***and*** $\frac{5}{15}$

A1

their two comparable proportions

and No

Strand (iii)
Supporting answers with explanation and evidence

Q1 ft

(b) A valid suggestion for improvement

eg ask people not at leisure centre *oe*
Condone ask more / bigger sample

B1

[4]

Q22.

Lists outcomes

1, 4		4, 1
1, 5		5, 1
1, 6	and /	6, 1
2, 4	or	4, 2
2, 5		5, 2
2, 6		6, 2

Even dice 1 − $\frac{2}{3}$

or

odd dice 1 − $\frac{1}{3}$

or

odd dice 2 − $\frac{1}{2}$

or

even dice 2 − $\frac{1}{2}$

M1

One of :
A (both even) has 2 outcomes
B (both odd) has 1 outcome
C (one odd one even) has 3 outcomes

One of:

P(both even) = $\frac{1}{2}\times\frac{2}{3}=\frac{1}{3}$ or $\frac{2}{6}$

P(both odd) = $\frac{1}{2}\times\frac{1}{3}=\frac{1}{6}$

P(odd and even any order) = $\frac{1}{2}\times\frac{2}{3}+\frac{1}{2}\times\frac{1}{3}=\frac{1}{2}$ or $\frac{3}{6}$

or 1 − $\frac{2}{6}-\frac{1}{6}$

M1 dep

B, A, C

All three shown and correct and BAC

A1

[3]