

**M1.(a)** 0.6 or 60% or  $\frac{6}{10}$

oe

**B1**

(b)  $200 \times 0.4$

oe

**M1**

80

SC1 120 or  $\frac{80}{200}$

**A1**

(c) 0.75 or 75% or  $\frac{150}{200}$

oe

**B1**

**[4]**

**M2.(a)**  $\frac{2}{5}$

B1 for  $\frac{8}{20}$  or  $\frac{4}{10}$  or 2 out of 5 or 40% or 0.4  
SC1 for  $\frac{3}{5}$

**B2**

(b)  $1 - 0.14$

oe

**M1**

0.86

oe

A1  
[4]**M3.**

(a) 
$$1 - 0.2 - 0.15 - 0.3$$
$$1 - 0.65$$

M1

0.35

oe

A1

(b) 0.5

oe

B1

(c) 
$$200 \times 0.15 \quad \text{or} \quad \frac{30}{200}$$
$$oe$$

M1

30

SC1 170

A1

**Alternative**

$$200 - (200 \times 0.2 + 200 \times 0.3 + 200 \times \text{their } 0.35)$$

M1

30

SC1 170

A1  
[5]**M4.**

(a) 
$$1 - 0.2 - 0.15 - 0.3$$
$$1 - 0.65$$

M1

0.35

oe

A1

(b)  $200 \times 0.15$  or  $\frac{30}{200}$

M1

30

SC1 170

A1

**Alternative**

$200 - (200 \times 0.2 + 200 \times 0.3 + 200 \times \text{their } 0.35)$

M1

30

SC1 170

A1

[4]

**M5.(a)** 0.4 (relative frequency of white) or

1 (pink) oe

B1

their  $5 \div 10 (= 0.5)$

or

$1 - \text{their } 0.4 - 0.1 = (0.5)$  oe

M1

Fully correct table ie

(4)	1	5
0.4	(0.1)	0.5

oe accept equivalent fractions or percentages for relative frequencies throughout

A1

- (b) Comment about increasing the sample size  
*eg she should repeat it more times or sample more balls oe*

B1  
 [4]

M6.(a) 0.05

B1

- (b)  $150 \times 0.92$

M1

138

*SC1 for 12*

A1  
 [3]

M7.

$300 \div 6 (= 50)$

**or**

$120 \times 6 (= 720)$

*oe*  $\frac{1}{6}$  *oe* *and*  $\frac{120}{300} (= \frac{2.4}{6})$

M1

No and 50

**or**

No and 36 (average of the other numbers)

**or**

No and 720

*No and any sensible comment linking the theoretical probability and experimental outcome with accurate calculation(s)*

*SC1 States or implies that 120 is too large a proportion*

A1  
 [2]

**M8.**

(a) 0.6

oe

**B1**

(b) 5

**B1**

(c) 0.4

oe

**B1**

**[3]**

**M9.**

(a)  $1 - (0.3 + 0.25 + 0.1)$

**M1**

0.35

oe

**A1**

(b) 0.4

oe

**B1**

**[3]**

**M10.**

$$1 - \frac{1}{4} \left( = \frac{3}{4} \right)$$

$24 \div 3 (= 8)$  or  $1 : 3$

**B1**

$24 \div 3 \times 4$

oe their  $8 + 24$  or  $(1 \times) 8 + 3 \times 8$  or  $4 \times 8$

**M1**

32

SC2  $\frac{8}{32}$  or  $\frac{24}{32}$

A1

[3]

**M11.** (a)  $1 - (0.41 + 0.24 + 0.22 + 0.04)$

$$1 - 0.91 \text{ oe}$$

Allow 100 - 91

M1

0.09

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

A1

(b)  $0.41 \times 8000 (= 3280)$

$$(1 - 0.41) \times 8000 (= 4720) \text{ oe}$$

M1

15 000 - their 3280

$$\text{their } 4720 + (15\,000 - 8000)$$

M1 dep

11 720

11 720

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

A1

[5]

**M12.** (a) Black

B1

(b)  $0.04 + 0.09$

M1

0.13

oe

A1

(c)  $0.04 + 0.07 + \dots + 0.14 (= 0.57)$ *Allow one error or omission**or 160 × any probability or 0.43 or**160 × their 0.57 (= 91.2)***and**  $160 - 91.2$ 

M1

 $160 \times (1 - \text{their } 0.57)$ 

M1 dep

68.8

A1

68 or 69

*Strand (i)**ft any seen decimal rounded or truncated to integer**SC2 91 or 92 no working*

Q1 ft

[7]