

**Y10 November Examination (Middle) MS**

**Q1.**

- (a)  $200 \div 5$  or  $\frac{1}{5}$  seen  
oe

**M1**

40

**A1**

- (b) Valid statement

*e.g.*

*Not (approximately) equal amounts on each number*

*Should all be (around) 40*

*3 is (more than) double 4*

*Only 2 is near expected value*

*Biased towards 3*

**M1**

No or Cannot tell

*May be implied by comment*

**A1**

**[4]**

**Q2.**

- (a) B and C

**B1**

- (b) SAS

*Must have (a) correct*

**B1dep**

**[2]**

**Q3.**

- (a)  $0.1 \times 400 (=40)$  or  $0.2 \times 500 (=100)$

**M1**

40 and 100

**A1**

140 or 140/900 but not 140 : 900

*SC2 for 760*

*SC1 for digits 14...*

*ft on their 40 + their 100 if complete correct*

*method seen.*

**A1ft**

- (b)  $\frac{4}{10}$  and  $\frac{3}{9}$  identified as probabilities

*May be on branches of a tree diagram.*

**M1**

$$\left(\frac{4}{10} \times \frac{3}{9}\right) = \frac{12}{90} = \frac{2}{15}$$

*Evidence of cancelling is necessary*

*but  $\frac{12}{90} = \frac{2}{15}$  is enough.*

*NB  $\frac{4}{5} \times \frac{3}{3}$  is 2 marks*

**A1**

Q4.

**Alternative method 1**

$$4x - 6y = 24$$

$$10x + 12y = 6$$

and

$$10x - 15y = 60$$

M1

$$9x = 27$$

$$\text{or } x = 3$$

$$27y = -54$$

$$\text{or } y = -2$$

M1dep

$$x = 3 \text{ and } y = -2$$

*oe*

*SC1 for  $x = 3$  and  $y = -2$  without working or using trial and improvement*

A1

**Alternative method 2**

$$y = \frac{2x - 12}{3}$$

$$\text{or } y = \frac{3 - 5x}{6}$$

$$x = \frac{12 + 3y}{2}$$

$$\text{or } x = \frac{3 - 6y}{5}$$

*oe*

*Rearranging*

M1

$$9x = 27$$

$$\text{or } x = 3$$

$$27y = -54$$

$$\text{or } y = -2$$

*oe*

*Elimination of one variable and simplification*

M1dep

$$x = 3 \text{ and } y = -2$$

*oe*

*SC1 for  $x = 3$  and  $y = -2$  without working or using trial and improvement*

A1

[3]

Q5.

$$\frac{4}{9}$$

B1

[1]

Q6.

1.24 or 124% or  $\frac{124}{100}$  or  $\frac{100}{124}$  seen

B1

$6014 \div 1.24$

oe  $6014 \div 124 \times 100$

M1

4850

A1

[3]

Q7.

**Alternative method 1**

$3a (+) 4c (=) 23$

and

$3a (+) 15c (=) 45$

or

$15a (+) 20c (=)$

115

and

$4a (+) 20c (=) 60$

oe eg works in pence

Multiplies one or both equation(s) to equate coefficients of  $a$  or  $c$

Allow one error in multiplication

M1

$11c (=) 22$

or

$11a (=) 55$

oe

Subtracts equations to eliminate one variable

Allow one error in subtraction

M1

$(a =) 5$  or  $(c =) 2$

A1

$(a =) 5$  and  $(c =) 2$

A1

**Alternative method 2**

$$a = \frac{23 - 4c}{3}$$

or  $a = 15 - 5c$

or

$$c = \frac{23 - 3a}{4}$$

$$\text{or } c = \frac{15 - a}{5}$$

oe

Makes  $a$  or  $c$  the subject

M1

$$\frac{23 - 4c}{3} = 15 - 5c$$

or

$$\frac{23 - 3a}{4} = \frac{15 - a}{5}$$

oe

Correctly substitutes their expression to eliminate one variable

M1

(a =) 5 or (c =) 2

A1

(a =) 5 and (c =) 2

A1

**Additional Guidance**

Accept any letters, or 'adult' and 'child', as variables

To allow one error in the first mark of alt 1, the 'equal' coefficients must be the same. eg

allow  $3a + 4c = 23$  and  $3a + 15c = 15$

but not  $3a + 4c = 23$  and  $3a + 5c = 45$

[4]

Q8.

(a)  $\frac{29}{50}$

oe

B1

(b)  $\frac{23}{50}$

oe

SC1 Incorrect but consistent denominator, greater than 29, used in (a) and (b) with correct numerators

B1

(c) Only has a TV

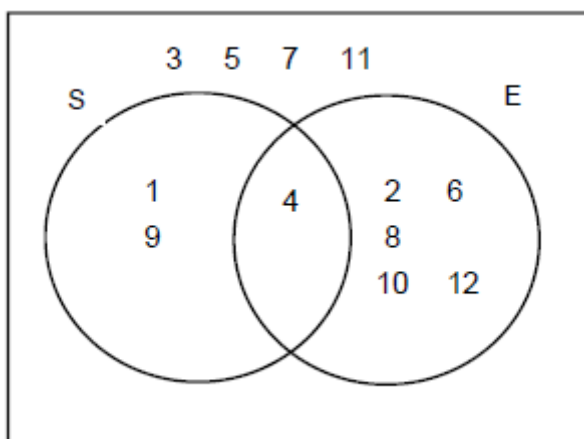
oe

B1

[3]

Q9.

(a)



B2 Any 2 or 3 of the 4 sections correct

B1 Any 1 of the 4 sections correct

B3

(b)  $\frac{1}{12}$

oe  
ft their Venn diagram

**B1ft**

**[4]**

**Q10.**

(a) (5, 0)

(5x, 0y) is B0  
Check diagram for answer written next to P if answer line is blank

**B1**

(b) Correct elimination of a letter

e.g.  $2x = 15 - 3x$

oe e.g.  $y = 15 - \frac{3}{2}y$

**M1**

Correctly collects terms

e.g.  $2x + 3x = 15$

oe e.g.  $y + \frac{3}{2}y = 15$

**M1dep**

(3, 6)

Allow  $x = 3$  and  $y = 6$  if not contradicted on answer line

**A1**

(c)  $\frac{1}{2} \times$  their 5  $\times$  their 6

oe e.g.  $\frac{2 \times 6}{2} + \frac{3 \times 6}{2}$

their 5 from (a) and their 6 from (b)

**M1**

15

ft their 5 from (a) and their 6 from (b)

**A1ft**

**[6]**

**Q11.**

$\frac{7}{12} \times \frac{6}{11}$  or  $\frac{3}{12} \times \frac{2}{11}$

or  $\frac{2}{12} \times \frac{1}{11}$

oe

**M1**

$\frac{7}{12} \times \frac{6}{11}$  and  $\frac{3}{12} \times \frac{2}{11}$

and  $\frac{2}{12} \times \frac{1}{11}$

oe

This mark implies M1 M1

**M1**

$$\frac{7}{12} \times \frac{6}{11} + \frac{3}{12} \times \frac{2}{11} + \frac{2}{12} \times \frac{1}{11}$$

$$\frac{25}{66} \quad \text{or} \quad \frac{50}{132}$$

*oe fraction*  
 Accept 0.37(8...) or 0.38

M1

A1

[4]

**Q12.**

0.3 seen (using probabilities add to 1)

M1

Splitting in the ratio of 1:2

M1

Red 0.1 and blue 0.2 seen

A1

P(blue or yellow) = 0.4

A1

[4]

**Q13**

13a) for attempting product rule for counting with 1 error (10x10x5)

M1

500

A1

b) good attempt to find the number of codes containing a 3

M1

eg. x3xx variations and xx3x variations and x33x variations (any of these calculated)

9x5 + 9x5 + 5

$$\frac{95}{500}$$

A1

[4]

**Q14.**

AD = AE (10 (cm) or sides of a square) or sides marked as 10 on diagram

*Must give a reason or mark sides as 10 on diagram*

B1

AB = AG (10 (cm) or sides of a square) or sides marked as 10 on diagram

*Must give a reason or sides as 10 on diagram*

B1

Angle DAG = angle EAB (135 or 90 + 45)

*Must state 135 or 90 + 45 or 135 shown for both angles on diagram*

B1

Congruent due to SAS (could be expressed in words eg two sides and angle between them the same)

or congruent due to ASA or AAS or SAA with 22.5 shown or stated (after 135 seen) as one of the other angles. (could be in words eg two angles and the side between them, or two angles and a side)

*Q0 for congruent without SAS, AAS etc or the appropriate reason for their proof stated in words (strand (ii))*

B1