

Mark schemes

Q1.

Alternative method 1

4×15 or 60
or 2×10 or 20
or 80

oe

M1

$\frac{10}{100} \times$ their 80 or 8

or 1.1 and working for first M1 seen

oe

$\frac{10}{100} \times$ their 60 or 6 or 66

or $\frac{10}{100} \times$ their 20 or 2 or 22

M1dep

their 80 + their 8
or $1.1 \times$ their 80
or 88

oe

their 60 + their 6 + their 20 + their 2

or $1.1 \times$ their 60 + $1.1 \times$ their 20

or their 66 + their 22

M1dep

$0.03 \times$ their 88 or 2.64
or their 88 $\times 1.03$

oe

M1dep

90.64(p)

A1

Alternative method 2

$\frac{10}{100} \times 15$ or 1.5(0) and $\frac{10}{100} \times 10$ or 1 or 1.1 seen

oe

M1

15 + their 1.5(0) or 15×1.1 or 16.5(0)
and
10 + their 1 or 10×1.1 or 11

oe

27.5(0) implies M2

M1dep

their 16.5(0) $\times 0.03$ or 0.495
and their 11 $\times 0.03$ or 0.33

or
their $16.5(0) \times 1.03$ or 16.995
and their 11×1.03 or 11.33

oe
 $4 \times \text{their } 16.5(0) + 2 \times \text{their } 11$
or their 66 + their 22
or 88

M1dep

their $0.495 \times 4 + \text{their } 0.33 \times 2$
or $1.98 + 0.66$ or 2.64
or
their 16.995×4 or 67.98
and their 11.33×2 or 22.66

oe
 $0.03 \times \text{their } 88$ or 2.64
or their 88 × 1.03

M1dep

90.64(p)

A1

Alternative method 3

4×15 or 60
or 2×10 or 20
or 80

oe

M1

$\frac{10}{100} \times \text{their } 80$ or 8
or $\frac{13}{100} \times \text{their } 80$ or $10.4(0)$

or 1.13 and working for first M1 seen

oe
 $\frac{13}{100} \times \text{their } 60$ or $7.8(0)$
or $\frac{13}{100} \times \text{their } 20$ or $2.6(0)$

M1dep

their $80 + \text{their } 10.4(0)$
or 1.13×80 or $90.4(0)$
or
 $0.03 \times \text{their } 8$ or 0.24

oe
 $60 + \text{their } 7.8(0) + 20 + \text{their } 2.6(0)$
or 67.8(0) + 22.6(0)

M1dep

their $80 + \text{their } 10.4(0)$
or 1.13×80 or $90.4(0)$
and
 $0.03 \times \text{their } 8$ or 0.24

oe

M1dep

90.64(p)

A1

[5]

Q2.

Complete, correct build up method

or

$$0.51 \times 400$$

$$\text{eg } 400 \div 2 + 400 \div 100 \text{ oe}$$

M1

204

A1

[2]

Q3.

Alternative method 1

(10% =) 19 or (50% =) 95 or (20% =) 38 or (30%) = 57 or (5% =)

9.5 or (1% =) 1.9 etc

*Any correct comparison of a percentage and a value except
100% = 190*

M1

Any combination of values that make 35% eg 95 – their 19 – their

9.5, their 19 + their 19 + their 19 + their 9.5

or 66.5

*Must be correct values or valid method shown leading to
their values*

$$256.5 \text{ or } 256 \frac{1}{2} \text{ or } 256.50p$$

M1dep

256.50

Strand (i) ft 190 + their 35% if M1, M0 awarded

Must be correct money notation

Q1ft

Alternative method 2

0.35 or 1.35 seen or $\frac{35}{100}$ or $\frac{135}{100}$ or 135%

M1

0.35 × 190 or 1.35 × 190 or 66.5

$$\text{or } \frac{135}{100} \times \frac{190}{1} \text{ or } \frac{35}{100} \times \frac{190}{1}$$

oe 256.5 or 256 $\frac{1}{2}$ or 256.50p

M1dep

256.50

Strand (i) Must be correct money notation

Q1

Additional Guidance

19 38

$$5\% = 19 \div 2 = 8$$

$$35\% = 19 + 38 + 8 = 65$$

M1

255

M0dep

Q1ft

$$10\% = 19 \quad 20\% = 38$$

$$5\% = 8$$

$$35\% = 19 + 38 + 8 = 65$$

M1

255

M1dep

Q0

$$10\% = 19 \quad 20\% = 38$$

$$5\% = 9.5$$

$$35\% = 19 + 38 + 9.5 = 64.5$$

M1

254.50

M1dep

Q0

$$190 \times 1.35$$

Uses box method to get 256.5

265.50

Transcription error.

M1
M1dep
Q1

$$10\% = 19 \quad 20\% = 36$$

$$5\% = 9.5$$

$$35\% = 19 + 36 + 9.5 = 44.5$$

M1

224.50

M0dep

Q0ft

[3]

Q4.

Alternative method 1

60 × 40 or 2400		
oe		M1
their 2400 – 2000 or 400 or 2000 – their 2400		M1dep
$\frac{\text{their 400}}{2000} (\times 100)$ or 0.2		
oe		M1dep
20(%)		A1
Alternative method 2 60 × 40 or 2400		
oe		M1
their 2400 – 2000 or 400 or 2000 – their 2400		M1dep
10% = 2000 ÷ 10 or 1% = 2000 ÷ 100 and correctly finds multiplier using build up or division to find percentage equivalent to total their 400		
oe <i>Correct build up to find percentage equivalent to total their (their 2400 – 2000) or their (2000 – their 2400) implies M3</i>		M1
20(%)		A1
Alternative method 3 60 × 40 or 2400		M1
$\frac{\text{their 2400}}{2000} (\times 100)$ or 120(%) or 1.2		M1dep
their 120 – 100 or their 1.2(0) – 1(.00) or 100 – their 120 or 1(.00) – their 1.2(0) or 0.2		
oe		M1dep
20(%)		A1
Additional Guidance 20% on answer line and no working		M1M1M1A1

480 × 5 (= 2400) from 5 years scores minimum M1

60 × 40 = 1800 and 200 scores minimum M1M1

60 × 40 = 1800 and 200 and $\frac{200}{2000}$

M1M1M1A0

60 × 40 = 1800 and $\frac{200}{2000}$

M1M1M1A0

$\frac{2000}{\text{their } 2400}$ (= 1.2) does not score second method mark on ALT3

[4]

Q5.

400 × 1.07

B1

[1]

Q6.

(a) 15.6 ÷ 4 or 156 ÷ 40

or
 $\frac{156}{100} \times \frac{100}{40}$

Correctly multiplying both numbers by the same number so that 0.4 becomes an integer

M1

3.9

oe
SC1 digits 39

A1

(b) Any decimal greater than $0.\dot{6}\dot{3}$ and less than $0.\dot{7}$

B1 Any fraction or percentage between $\frac{7}{11}$ and $\frac{7}{9}$ (eg $\frac{7}{10}$ or 70%) or

Correctly evaluates $\frac{7}{11}$ to 0.63... or $\frac{7}{9}$ to 0.77...

B2

(c) Any correct fraction

eg $\frac{83}{200}, \frac{415}{1000}, \frac{41}{99}, \frac{41}{98}, \frac{42}{101}, \frac{42}{102}$

B1 $\frac{41.5}{100}$

or

any 'correct' fraction with non-integer numerator and/or denominator

or

any decimal between 41% and 42%

B2

Q7.

54

B1

[1]

Q8.

50×3

B1

[1]

Q9.

Alternative method 1

90 is 75%

oe

M1

$90 \div 75 \times 100$

oe

M1dep

120

M1

$\frac{1}{3} \times 120$ or 40

M1

$120 - 40 = 80$

or $120 \div 3 \times 2 = 80$

A1

Alternative method 2

80 is two-thirds or 80 is 66.6(...)(%)

oe

M1

$80 \div 2 \times 3$

oe

M1dep

120

M1

$\frac{25}{100} \times 120$ or 30 or 75% or $\frac{75}{100}$

oe

A1

$$120 - 30 \text{ or } 90 \text{ or } \frac{75}{100} \times 120$$

and

$$90 - 10 = 80$$

A1

[5]

Q10.

$$51 + 34 + 30 + 17$$

or 132

M1

$$(0) + 8 + 20 + 43 + 37 + 51 + 34 + 30 + 17$$

or their $132 + 8 + 20 + 43 + 37$

or their $132 + 108$

or 240

M1

$$\frac{60}{100} \times \text{their } 240$$

$$\frac{\text{their } 132}{\text{their } 240} \times 100$$

M1

144

55 (%)

A1

No stated or implied

Strand (iii) Correct conclusion for their values dependent on method marks.

Q1ft

Alternative Method

$$8 + 20 + 43 + 37$$

or 108

M1

$$(0) + 8 + 20 + 43 + 37 + 51 + 34 + 30 + 17$$

or their $108 + 51 + 34 + 30 + 17$

or their $108 + 132$

or 240

M1

$$\frac{40}{100} \times \text{their } 240$$

$$\frac{\text{their 108}}{\text{their 240}} \times 100$$

M1

96

45 (%)

A1

No stated or implied

Strand (iii) Correct conclusion for their values dependent on method marks.

Q1ft

[5]

Q11.

Alternative method 1

53 – 46 or 7

or 53 million – 46 million

or 7 million

oe

M1

$$\frac{7}{46} (\times 100) \text{ or } 0.152 (\dots)$$

oe

Accept 0.15 if correct method shown

M1dep

15.2(...) (%)

Accept 15(%) if correct method shown

A1

Alternative method 2

$$\frac{53}{46} (\times 100) \text{ or } 1.152\dots$$

or 115.2(...)

M1

1.152... – 1 or 0.152(...)
or 115.2(...) – 100

M1dep

oe

Accept 1.15 if correct method shown

Accept 115 if correct method shown

Accept 0.15 if correct method shown

15.2(...) (%)

Accept 15(%) if correct method shown

A1

Alternative method 3

Any correctly evaluated percentage of 46 (million)

eg

1(%) is 0.46 (million)

5(%) is 2.3 (million)

10(%) is 4.6 (million)

M1

15(%) (increase) is 52.9 (million) or

15.1(%) (increase) is 52.946 (million) or

15.2(%) (increase) is 52.992 (million) or

15.3(%) (increase) is 53.038 (million) or

15.4(%) (increase) is 53.084 (million) or

15.5(%) (increase) is 53.13 (million)

oe 15(%) is 6.9 (million) or

15.1(%) is 6.946 (million) or

15.2(%) is 6.992 (million) or

15.3(%) is 7.038 (million) or

15.4(%) is 7.084 (million) or

15.5(%) is 7.13 (million) and

7 (million)

M1dep

15.2(...) (%)

*Accept 15(%) with two of the trials listed above (or better),
one with an answer below 53 million (or 7 million), the other
with an answer above 53 million (or 7 million)*

A1

Additional Guidance

Incorrect number of zeros used for millions cannot score A mark

15(%) scores at least 2 unless clearly from incorrect working

[3]

Q12.

(a) 1400×0.11

oe

M1

154

A1

(b) $\frac{4}{5} \times 295$

or $295 \div 5$ or 59

oe

M1

236

A1

Q13.

$$\frac{150}{800} (\times 100)$$

$$\text{or } \frac{150}{650+150} (\times 100)$$

or 0.1875

oe

M1

18.75 or 18.8 or 19

*oe**SC1 for 81.25 or 81 or 81.3*

A1

Additional Guidance

$$\frac{800}{150}$$

M0

19 with no working

19 is incorrect only if clearly from wrong working

Build up methods score 0 or 2

M1A1

[2]

Q14.

$$\frac{150}{500} (\times 100)$$

oe

M1

30

A1

[2]

Q15.

$$75\% = 14\ 625$$

oe

$$14\ 625 \div 3 \text{ or } 4875$$

M1

$$\frac{14\ 625 \times 100}{75}$$

$$\text{or } 14\ 625 \div 0.75$$

$$\text{or } 14\ 625 \div 75$$

$$\text{or } 195$$

oe

$$14\ 625 + \text{their } 4875$$

or $4 \times \text{their } 4875$

M1dep

19 500

A1

Additional Guidance

$14\,625 \times 75 \div 100$

M0

[3]

Q16.

Alternative method 1

4200×0.38 or 1596

1.38 seen

M1

5796

A1

Alternative method 2

$4200 \div 10 \times 3 + 4200 \div 10 \div 2 + 4200 \div 100 \times 3$
or 1596

M1

5796

A1

Alternative method 3

$4200 \div 10 \times 4 + 4200 \div 100 \times 2$

M1

or 1596

A1

[2]

Q17.

82.5% or 0.825 used

M3 $264 \div 0.825$ or 320

M1

$\frac{264}{82.5}$ or 3.2

M1dep

their 3.2×100 or 320
or their 3.2×17.5

M1dep

56

A1

[4]

Q18.

25%

B1

[1]

Q19.

0.875

B1

[1]

Q20.

33 + 75 or 108 seen or 60 + 100 or 160 seen

M1

$(33 + 75) \div (60 + 100) (\times 100)$ or their $108 \div$ their $160 (\times 100)$ or $0.675 (\times 100)$
oe

M1dep

67.5 or 68

A1

Additional Guidance

67.5 or 68

M1M1A1

$108 \div 160 = 0.67$
67

M1M1A0

0.675
67

M1M1A0

67 with no working

M0M0A0

[3]

Q21.

Alternative method 1

400×0.37 or 4×37 or 148
or 1.37 seen

oe

M1

548

A1

Alternative method 2

$400 \div 10 \times 3 + 400 \div 10 \div 2 +$
 $400 \div 100 \times 2$
or $40 \times 3 + 20 + 4 \times 2$ or 148

oe

M1

548

A1

Alternative method 3

$$400 \div 10 \times 4 - 400 \div 100 \times 3$$

or $40 \times 4 - 4 \times 3$ or $160 - 12$ or 148

oe

M1

548

A1

[2]

Q22.

$$10\% \text{ of } 20 = 20\% \text{ of } 10$$

Any unambiguous indication

B1

[1]

Q23.

$$130\% = \text{£}2.34$$

or 2.34×1.3
or $(\text{£})1.8(0)$

oe

M1

$$\text{their } (\text{£})1.8(0) \times 1.4$$

M1dep

2.52

A1

[3]

Q24.

Alternative method 1

$$6300 \times 2.58$$

oe

M1

16254

A1

Alternative method 2

Fully correct build up method

$$\text{eg } 100\% = 6300$$

$$\text{and } 50\% = 6300 \div 2 \text{ or } 3150$$

$$\text{and } 1\% = 6300 \div 100 \text{ or } 63$$

and
 $2 \times 6300 + \text{their } 3150 + 8 \times \text{their } 63$

M1

16254

A1

[2]

Q25.

Alternative method 1

60×0.5 or 30

oe

M1

$(100 - 60) \times 0.2$

or 8

oe

M1

38

SC2 0.38

A1

Alternative method 2

Implies boys are 40% and works out 50% of their girl total

eg 60 and 40 seen and $\frac{1}{2} \times 60 = 30$

or 120 and 80 seen and $\frac{1}{2} \times 120 = 60$

M1

Works out 20% of their boy total

eg 0.2×40 or 8

or 0.2×80 or 16

M1dep

38

oe

A1

[3]