

Y9 November 2020 (non-calculator) MS

Q1.

536

B1 for $6432 \div 12$

or digits 536 eg 0.0536 53600

B2

[2]

Q2.

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

MOM0A0

[3]

Q3.

(a) 0.0048

B1

(b) 0.000 012

B1

(c) 2.5×10^6

B1

[3]

Q4.

$$4\frac{1}{2} \times 3\frac{3}{4} \text{ or } \frac{9}{2} \text{ or } \frac{15}{4}$$

M1

$$\frac{9}{2} \times \frac{15}{4} \text{ or } \frac{135}{8}$$

M1dep

$$16\frac{7}{8}$$

oe mixed number

A1

Alternative method

$$4.5 \times 3.75 \text{ or } 15 \text{ or } 1.875$$

M1

Full method to evaluate 4.5×3.75

allow one error

M1dep

$$16.875$$

condone rounding or truncation after correct answer seen

A1

[3]

Q5.

(a) Correct product using at least one prime factor

For example

2 (x) 126 or 3 (x) 84 or

7 (x) 36 or 2 (x) 2 (x) 63 or

2 (x) 3 (x) 42

May be implied

eg in a factor tree or repeated division

M1

$$2 \times 2 \times 3 \times 3 \times 7 \text{ or}$$

$$2^2 \times 3^2 \times 7$$

A1

(b) 84

B1

[3]

Q6.

$$\frac{5}{6} \text{ costs } (\text{£})1.2(0)$$

oe

$$\frac{1.2 \times 6}{5}$$

oe

B1

1.44

144p
SC2 for answer 0.72 or 72p

M1

A1

[3]

Q7.

(a) substitute numbers with conclusion A1

(b) No and 5
or
No and correctly evaluated counter example B1

Additional Guidance

No, anything between -17°C and 0°C is positive in Fahrenheit B1

No, anything between 0°F and 32°F is negative in Celsius B1

Unless the range from -17°C to 0°C is given, then the counter example must be evaluated correctly

No because 1.8×-15 is -27 , and $32 - 27 = 4$ B0

Any temperature in Celsius between $-17\frac{7}{9}^{\circ}\text{C}$ can be used as a counter-example

eg1 $1.8 \times -10 + 32 = 14$ so No B1

eg2 $1.8 \times -1 + 32 = 30.2$ so No B1

No because 14°F is -10°C B1

Accept No because $-10 = 14$ B1

No because -15 is positive in Fahrenheit

B0

[3]

Q8.

Alternative method 1

$$10x = 1.55\dots$$

and

$$9x = 1.4$$

oe method $100x = 15.55\dots$

and

$$99x = 15.4$$

M1

$$\frac{14}{90}$$

oe fraction $\frac{154}{990}$

M1

$$\frac{7}{45}$$

Correct simplification of their fraction and M1 scored

A1ft

Alternative method 2

$$0.1 + 0.055\dots = \frac{1}{10} + 0.055\dots$$

and

$$100x = 5.55\dots$$

and

$$99x = 5.5$$

oe method

M1

$$\frac{99}{990} + \frac{55}{990} \text{ or } \frac{154}{990}$$

oe fractions

M1

$$\frac{7}{45}$$

Correct simplification of their fraction and M1 scored

A1ft

Alternative method 3

$$\frac{1}{10} + \frac{5}{90}$$

oe method

M1

$$\frac{9}{90} + \frac{5}{90} \text{ or } \frac{14}{90}$$

oe fractions with common denominator

M1

$$\frac{7}{45}$$

Correct simplification of their fraction and M1 scored

A1ft

[3]

Q9.

100 cm = 1 m and 1000 m = 1 km
or 1 km = 100 000 cm
or $2.5 \times 200\,000$ or 500 000
or $200\,000 \div 100\,000$
or 200 000 cm = 2 km

M1

5

A1

[2]

Q10.

Alternative method 1

$$\frac{5}{6 + 5 + 7} \text{ or } \frac{5}{18}$$

$$\text{or } \frac{7}{9 + 7 + 8} \text{ or } \frac{7}{24}$$

oe fraction, decimal or percentage

M1

Attempt to convert to any common denominator

eg $\frac{20}{72}$ and $\frac{21}{72}$

or to decimals

eg 0.27(7...) and 0.29

eg 3 0.28 and 0.29)
or to percentages

eg 28% and 29%

Attempt to convert both to comparable form with one correct

oe

M1

$\frac{20}{72}$ and $\frac{21}{72}$ and Yes

oe fractions, decimals or percentages

A1

Alternative method 2

Chooses a number of counters that is a multiple of 18 and 24 eg 72

M1

$5 \times \frac{\text{their } 72}{18}$ or 20

or $7 \times \frac{\text{their } 72}{24}$ or 21

M1

20 and 21 and Yes

A1

Alternative method 3

35 : 42 : 49 and 35 : 45 : 40

M1

$\frac{35}{35 + \text{their } 42 + \text{their } 49}$ or $\frac{35}{126}$

or

$\frac{35}{35 + \text{their } 45 + \text{their } 40}$ or $\frac{35}{120}$

M1

$\frac{35}{126}$ and $\frac{35}{120}$ and Yes

11)

$$1.38 \times 10^{10} - 4.54 \times 10^9$$

$$1.38 \times 10^{10} - 0.454 \times 10^{10}$$

$$9.26 \times 10^9 \text{ years}$$

A1

[3]

M1

M1

A1

[3]