

M1.**Alternative method 1**

$$24.5 \div 7 \text{ or } 3.5(0)$$

M1

$$63 - 24.5 \text{ or } 38.5$$

M1

$$\text{their } 38.5 \div \text{their } 3.5$$

M1

$$11$$

A1**Alternative method 2**

$$24.5 \div 7 \text{ or } 3.5(0)$$

M1

$$63 \div \text{their } 3.5 \text{ or } 18$$

M1

$$\text{their } 18 - 7$$

M1

$$11$$

A1**Alternative method 3**

$$63 \div 24.5 \text{ or } \frac{18}{7}$$

oe

M1

7 x their $\frac{18}{7}$ or 18

M1

their 18 – 7

M1

11

A1

[4]

M2.**Alternative method 1**

5 x 24.2 or 121 (miles)

M1

their 121 ÷ 32.3
or
[3.74, 3.75] (gallons)

M1

their [3.74, 3.75] x 4.5
or
[16.8, 16.9] (litres)

M1

their [16.8, 16.9] x 1.27

M1

[21.33, 21.47] and bus

Accept 21 and bus if working shown

A1

Alternative method 2

5×24.2 or 121 (miles)

M1

their $121 \div 32.3$
or
[3.74, 3.75] (gallons)

M1

1.27×4.5
or 5.71(5) or 5.72

M1

their [3.74, 3.75] \times their 5.71(5)

M1

[21.33, 21.47] and bus

Accept 21 and bus if working shown

A1

Alternative method 3

$19.50 \div 5$ or 3.9(0)

M1

$24.2 \div 32.3$
or
[0.74, 0.75] (gallons)

M1

their [0.74, 0.75] \times 4.5
or
[3.3, 3.4] (litres)

M1

their $[3.3, 3.4] \times 1.27$

M1

[4.19, 4.32] and 3.9(0) and bus

Accept 4 and 3.9(0) and bus if working shown

A1

Alternative method 419.50 \div 5 or 3.9(0)

M1

24.2 \div 32.3

or

[0.74, 0.75] (gallons)

M1

1.27 \times 4.5

or 5.71(5) or 5.72

£ per gallon

M1

their [0.74, 0.75] \times their 5.71(5)

M1

[4.19, 4.32] and 3.9(0) and bus

Accept 4 and 3.9(0) and bus if working shown

A1

M3.

$$10\,000 \div 400 = 25$$

or

$$400 \times 25 = 10\,000$$

or

$$10\,000 \div 25 = 400$$

B1

Ticks 'No, the time will be longer' and gives correct explanation

oe

*eg He won't be able to run 10 km at same speed/rate/pace
as he runs 400 m*

B1**[2]****M4.**

(a) (10, 20.8), (20, 21.6), (30, 22.4) and (40, 23.2) plotted

B1

Straight line through their points

ft line of best fit following plotting error

B1ft

(b) [19.9, 20.1]

B1(c) **Alternative method 1**

21.2 or 22.8

M1

1.6

ft their graph

A1ft**Alternative method 2**

(20.8 + 21.6) ÷ 2 or 21.2

or

$$(22.4 + 23.2) \div 2 \text{ or } 22.8$$

M1

$$1.6$$

A1

Alternative method 3

$$23.2 - 21.6$$

or

$$22.4 - 20.8$$

or

$$21.6 - 20$$

or

$$(22.4 - 21.6) \times 2$$

or

$$(23.2 - 22.4) \times 2$$

Finds the difference for any two masses 20 kg apart

or

Doubles the difference for any two masses 10 kg apart

M1

$$1.6$$

A1

[5]**M5.****Alternative method 1**

$$90 \div 40 \text{ or } 2.25$$

$$\text{or } 356 \div 40 \text{ or } 8.9$$

oe

M1

$$801$$

A1

Alternative method 2

$$40 + 40 + 10$$

$$\text{and } 356 \div 4 \text{ or } 89$$

Clear build up method

M1

801

A1

[2]

M6.**Alternative method 1** Price of 40 batteries using packs

40 ÷ 4 or 10 (packs used in offer A)

and

40 ÷ 5 or 8 (packs used in offer B)

oe

8 is implied by the use of 6 packs in offer B

M1

their 10 × 2.52 or 25.2(0)

or their 2.52 ÷ 3 × 2 or 1.68

or their 8 × 2.75 or 22

or $\frac{3}{4} \times 40 \div 5$ or $30 \div 5$ or 6

oe

M1

their 25.2(0) ÷ 3 × 2

or 10 × their 1.68 or 16.8(0)

or $\frac{3}{4} \times$ their 22

or their 6 × 2.75 or 16.5(0)

oe

M1

16.8(0) and 16.5(0)

oe

A1

(Offer) B

*Strand (iii)**ft for correct decision based on their values, with one correct value and first two method marks*

Q1ft

Additional Guidance

Allow any correct working in pence up to M3

Allow consistent working in pence for M3 and A1Q1ft
 16.8(0) or 16.5(0) or 6×2.75 is minimum M0M1M1

Alternative method 2 Price of 40 batteries using unit price

$$2.52 \div 4 \text{ or } 0.63$$

and

$$2.75 \div 5 \text{ or } 0.55$$

oe

M1

$$40 \times \text{their } 0.63 \text{ or } 25.2(0)$$

$$\text{or } 40 \times \text{their } 0.55 \text{ or } 22$$

oe

M1

$$\text{their } 25.2 \div 3 \times 2 \text{ or } 16.8(0)$$

$$\text{or } \frac{3}{4} \times 40 \times \text{their } 0.55$$

$$\text{or } 30 \times \text{their } 0.55$$

$$\text{or } \frac{3}{4} \times \text{their } 22 \text{ or } 16.5(0)$$

oe

M1

$$16.8(0) \text{ and } 16.5(0)$$

oe

A1

(Offer) B

Strand (iii)

ft for correct decision based on their values, with one correct value and first two method marks

Q1ft

Additional Guidance

Allow any correct working in pence up to M3

Allow consistent working in pence for M3 and A1Q1ft

16.8(0) or 16.5(0) is minimum M0M1M1

Alternative method 3 Price per battery

$$252 \div 4 \text{ or } 63$$

and

$$275 \div 5 \text{ or } 55$$

oe

M1

their $63 \div 3 \times 2$ or 42

oe

M1

$\frac{3}{4} \times$ their 55 or 41(.25)

oe

M1

42 and 41(.25)

oe

A1

(Offer) B

Strand (iii)

ft for correct decision based on their values, with one correct value and first two method marks

Q1ft

Additional Guidance

Allow any correct working in pounds up to M3

Allow consistent working in pounds for M3 and A1Q1ft

42 or 41(.25) is minimum M0M1M1

[5]

M7.

Alternative method 1

$\frac{1500}{600}$ or 2.5

or $\frac{600}{1500}$ or 0.4

oe

M1

3.3×2.5 or 8.25

$9.6 \div 2.5$ or 3.84

$\frac{15}{100} \times 9.6$ or 1.44

or 0.85 seen

M1

$$\frac{15}{100} \times 9.6 \text{ or } 1.44$$

or 0.85 seen

$$\frac{15}{100} \times 3.84$$

or 0.576

or 0.85 seen

9.6 – their 1.44

or 0.85 × 9.6

or 8.16

M1

9.6 – their 1.44 or 8.16

or 0.0064 × 0.85

$$3.84 - 0.576$$

or 0.85 × 3.84

their 8.16 ÷ 2.5

M1dep

8.25 and 8.16

$$3.26 \text{ or } 3.264 \text{ or } 3.27$$

A1

1500 g pack identified

*Strand(iii) correct conclusion for their values provided
method marks have been awarded*

Q1ft

Alternative method 2

3.3 ÷ 600 or 0.0055 (price per 1g)

3.3 ÷ 6 or 0.55 (price per 100g)

M1

9.6 ÷ 1500 or 0.0064

9.6 ÷ 15 or 0.64

$$9.6 \times \frac{15}{100} \text{ or } 1.44$$

or 0.85 seen

M1

$$\frac{15}{100} \times 0.0064 \text{ or } 0.00096$$

or 0.85 seen

$$\frac{15}{100} \times 0.64 \text{ or } 0.096$$

or 0.85 seen
 9.6 – 1.44
 or 0.85 × 1.44
 or 8.16

M1dep

their 0.0064 – their 0.00096

or 0.85 × 0.0064

or 0.0054(4)

their 0.64 – their 0.096
 or 0.85 × their 0.64
 or 0.544
 8.16 ÷ 15 or 0.544

M1dep

0.0055 and 0.00544

0.55 and 0.544

A1

1500 g pack identified

*Strand(iii) correct conclusion for their values provided
 method marks have been awarded*

Q1ft

Alternative method 3

3.3 ÷ 600 or 0.0055 (price per 1 g)

M1

$$\frac{15}{100} \times 9.6 \text{ or } 1.44$$

or 0.85 seen

9.6 ÷ 2.5 or 3.84
 $\frac{15}{100} \times 9.6 \text{ or } 1.44$
 or 0.85 seen

M1

9.6 – their 1.44

or 0.85 × 9.6

or 8.16

$\frac{15}{100} \times 3.84$
 or 0.85 seen
 or 0.576

9.6 – their 1.44
 or 0.85×9.6
 or 8.16

M1

their 8.16 \div 1500 or 0.00544
 $3.84 - 0.576$
 or 0.85×3.84
 their 8.16 \div 2.5

M1dep

0.0055 and 0.00544
 3.26 or 3.27

A1

1500 g pack identified

*Strand(iii) correct conclusion for their values provided
 method marks have been awarded*

Q1ft

Alternative method 4

600 \div 3.3 or 181.8...
 3.30×5 or 16.50

M1

$\frac{15}{100} \times 9.6$ or 1.44

or 0.85 seen

$\frac{15}{100} \times 9.6$ or 1.44
 or 0.85 seen

M1

9.6 – their 1.44

or 0.85×9.6

or 8.16

9.6 – their 1.44
 or 0.85×9.6
 or 8.16

M1

1500 \div their 8.16 or 183.8...
 their 8.16 \times 2 or 16.32

M1

181.8... and 183.8 ...
 16.32 and 1650

A1

1500 g pack identified

*Strand(iii) correct conclusion for their values provided
method marks have been awarded*

Q1ft

[6]

M8.(a) 600

B1

(b) $900 - 860$ or $860 + 40 = 900$ or 40

or

 $0.9 - 0.86$ or $0.86 + 0.04 = 0.9$ or 0.04*Condone 860 - 900**oe**Condone incorrect or missing units*

M1

40 grams or 0.04 kg

SC1 940 g or 0.94 kg

A1

Additional Guidance

If you see $860 + 40 = 900$ but then further work to build up to eg 1800, mark the whole method and the only mark available is the SC1.

Once 40 g or 0.04 kg seen, ignore any attempt to change units.

40 g seen in working but then 40 on ans line - condone. M1A1

[3]

M9. Any valid conversion seen, eg

10 (cm) = 4 (inches)

25 (cm) = 10 (inches)

30 (cm) = 12 (inches)

Numbers may be marked next to graph

M1

$$150 \text{ (cm)} = 60 \text{ (inches)}$$

or

$$75 \text{ (inches)} = [185, 190] \text{ (cm)}$$

or

$$75 : 150 = 1 : 2 \text{ and inch : cm} = 1 : 2.5$$

or

$$\text{eg } 150 \div 30 = 5 \text{ and } 75 \div 12 = 6 \text{ .(...)}$$

May use any value [60, 75] (inches) correctly converted to cm to show it is not enough

eg 70 inches = 175 cm

A1

Correct conclusion with appropriate values stated

eg No and 60

or No and [185, 190]

or No and each inch needs 2.5 cm and there are only 2

oe

Strand (iii) Allow Q1ft if M1A0 awarded, an arithmetic error made in calculating conversion of 150 cm or 75 inches and a correct conclusion reached for their values. Must be using correct conversions throughout

Q1ft

Alternative method

Divides 150 and 75 by a common factor of at least 5

$$\text{eg } 150 \div 10 = 15 \text{ and } 75 \div 10 = 7.5$$

M1

Reads off accurately for one of their values eg 15 cm = 6 inches

or

Draws lines across and down accurately for both values

A1

Correct conclusion comparing their scaled value and graph value or comparing their pairs of lines

Strand (iii) Allow Q1ft if M1A0 awarded, an error made in reading value and correct conclusion reached for their values

M1

Additional Guidance

Note that the list for Q1 are only examples, there are many other possible valid conclusions

eg1 70 inches = 175 cm so 150 cm is not enough

eg2 $150 \div 30 = 5$ and $75 \div 12 = 6$ (...) so No because need 6 times and only 5.

They must be using a correct conversion for all parts of their answer to qualify for the Q mark. Allow arithmetic errors only.

[3]

M10.(a) $y = kx$

$$y = kx^2$$

B1 for 2 or 3 correct

$$y = \frac{k}{x}$$

$$y = \frac{k}{x^2}$$

Ignore incorrect

B2

(b) $8 = \frac{k}{3}$

oe

M1

$$8 \times 3 \div 5$$

oe

M1

4.8

oe eg $\frac{24}{5}$ or $4\frac{4}{5}$ SC1 for $\frac{40}{3}$ (13.3...)oeSC1 for $\frac{40}{9}$ (4.4...) oeSC1 for $\frac{72}{25}$ (2.88 or 2.9) oe

A1

[5]

M11.(a) $5.99 \div 8$ or $599 \div 8$ *Condone $6 \div 8$ or $600 \div 8$*

M1

74.875 (p) or 74 (p) or 75 (p)

*Accept £ 0.74 or £ 0.75 or £ 0.74875**Allow any correct rounding or truncation giving an answer to 2 or more s.f.*

A1

(b) $3.99 \div 6$ or $399 \div 6$ oe*Scaling method used with £ 6*or $\frac{6}{8} \times 5.99$ *eg 8 cost £ 6, 4 cost £ 3, 2 cost £ 1.50 6 cost £ 4.50*or $6 \times$ their 75*£3.99 + their £1.50**£5.99 - their £1.50*or $6 \times$ their 0.75

M1

(£) 0.665 or 66(.5) (p) or 67 (p)

6 pack is better value

or 4.4925 or 450p or £4.50

7p, 8p or 9p cheaper per battery

and better value (Yes)

£5.49 or £4.49

Comparison must be with consistent units

ft their (a)

A1ft

Alternative method

$8 \div 5.99$ or $8 \div 599$

May be seen in (a)

and $6 \div 3.99$ or $6 \div 399$

6 costs £2 less (so extras are £1 each)

Compares cost of 24 batteries

£5.99 \times 3 and £3.99 \times 4

M1

1.3(3) and 1.5(0)

£1 compared with 75p

and 6 batteries better value (Yes)

£17.97 and £15.96

and 6 batteries better value

A1ft

[4]

M12.(a) $\frac{1}{2} \times (280 + 198) \times 86$ oe

or $198 \times 86 + \frac{1}{2} \times (280 - 198) \times 86$

or $280 \times 86 - \frac{1}{2} \times (280 - 198) \times 86$

M1

20554

A1

- (b) their $20\,554 \div 4047$ or 5.08 or
5.07... or 5.1

$$4047 \div 7 = 578.(14\dots)$$

M1

their 5.08×7

$$\text{their } 20\,554 \div \text{their } 578.(14\dots)$$

M1dep

35.5... or 35.56 or 35.7

A1

35

Rounding down

Q1ft

[6]

M13. 600 and 50 and 200*B2 for any two of 600, 50, 200**B1 for any one of 600, 50, 200*

or for sight of $\frac{2}{3}$ or $\frac{3}{2}$ oe,

or for sight of 2:3 or 3:2 oe

Accept 66%, 67%, 150%

If no correct values seen,

B1 for any correct proportion

eg Potatoes = 3 x stock

Potatoes = 12 x carrots

Stock = 4 x carrots

B3

[3]

