



## **NCFE Level 2 Functional Skills Qualification in Mathematics (603/5060/X)**

Mark scheme: P002132 OS24

Assessment window: On demand

v1.4 Post standardisation refresher

## Examiner Mark Scheme Guidance

### Information

This guidance is intended to support NCFE examiners in the valid, reliable and consistent application of the relevant mark scheme version, against learner evidence generated during their external assessment.

This mark scheme provides:

- the total marks available for each question
- the subject content reference for each mark
- example process/methods and evidence of the types of responses expected for each mark
- (once confirmed) the pass mark for the relevant assessment version.

This mark scheme **must** be used for paper-based and online marking of the assessment version indicated.

### Instructions and guidance on application

- All learners must receive the same treatment and should be marked fairly. Examiners must mark the first learner in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Learners must be rewarded for what they have shown they can do rather than penalised for things they have not done.
- Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Half marks must not be awarded.
- Examiners should be prepared to award zero marks if the learner's response is not worthy of credit according to the mark scheme.
- The mark scheme is a working document and may be added to at the standardisation to reflect valid alternative answers given by a learner.
- When in doubt regarding the application of the mark scheme to a learner's response, the Chief Examiner must be consulted.

This mark scheme provides the following information:

- section and activity information
- question number
- total marks available per question (top row, shaded)
- attribution of individual marks per question
- problem solving (PS) and underpinning skill (UPS) attribution
- process/method or answers, as well as additional or alternative evidence; indicative of the subject content (SC) attribution
- any additional guidance, as required.

To support the valid, reliable and consistent marking of learner evidence, the following abbreviations are applied throughout the mark scheme:

Annotation	Explanation and use
FT	Follow through marks are applied when there are earlier arithmetic mistakes in the method.
OE	Or equivalent marks are available for the justification of the answer being presented in a different form to the mark scheme i.e. 0.5 or $\frac{1}{2}$ .

<b>CAO</b>	Correct answer only.
<b>Their</b>	'Their' refers to the learners' own derived values.
<b>Seen</b>	Seen refers to the requirement to see the stated value in the learner's response or working out.
<b>Imp</b>	Implied refers to the learner's response implying correct working out used but not seen.
<b>Brackets</b>	Indicates units are not required on final answers or for answers seen within working.
<b>BOD</b>	Benefit of doubt where learner handwriting may be difficult to interpret but previous working may indicate correct final answer.
<b>Shaded</b>	Indicates requirements for full marks to be awarded.
<b>Coloured SC box</b>	<b>On-screen only:</b> indicates where SC ref will appear out of order in the Learning Outcomes marking screen

## Version Control

Mark schemes are subject to version control. Examiners **must** ensure they have access to the latest version following each standardisation event.

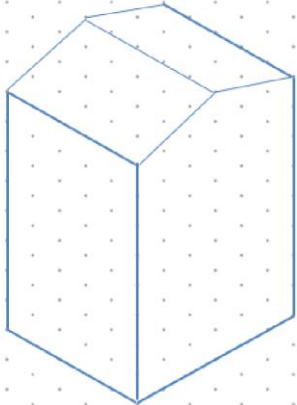
Over time mark schemes will incorporate additional evidence captured and confirmed during standardisation events. Any additional evidence criteria will be captured in colour-coded text applicable to the dated standardisation event.

## Recording of marks

*Paper-based:* Individual marks should be annotated in the 'Examiner' column in the learner script, added up and recorded at the end of each activity. The overall marks awarded for each learner should be clearly and legibly recorded in the grid on the front of the learner script.

*Online:* Onscreen marking tools (i.e. ticks, crosses) marks should be applied to indicate application throughout the learner script, in addition to marks being recorded numerically within the corresponding 'Learning Outcomes' box, indicated by the relevant Subject Content reference.

<b>Annotation</b>	<b>Explanation and use</b>
<b>Tick</b>	Used to indicate correct values/method or final answer.
<b>Red highlight</b>	Used to indicate where the learner has made an error in either the value used or an incorrect calculation.
<b>Red line box</b>	Used to indicate where the learner may have made an error that has resulted in benefit of doubt being applied i.e. transposition of figures but previous working clearly shows otherwise.

Paper number: P002132 OS24			Version: 1.4	Pass mark: 35	
(Section A) Activity 1: Bee keeping			(Non-calculator Test)		
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
1 (a)	3	PS	Yes AND 11 billion OR Yes AND 10 000 000 000 and 11 000 000 000	Award 3 marks if correct answer given from correct methods and accurate values if working seen	
	1		$220\,000 \times 50\,000$ or 11 000 000 000	OE Any full correct method	N2a
	1		10 000 000 000 OR 11 billion	FT their 11 000 000 000 written in billions from correct method May be seen or implied	N1a
	1		Yes AND 11 billion OR Yes AND 10 000 000 000 and 11 000 000 000	OE Yes supported by correct working	N1b
1 (b)	1	UPS	3.538	CAO	N10a
1 (c)	2	UPS	See additional guidance	Award full marks for fully correct drawing	
	1		Side of length 5 cm or 6 cm or 8 cm or 9 cm	One correct length drawn	M18b
	1		Fully correct shape	OE Allow any orientation, with or without 'hidden' edges Mark intention	M21
Additional guidance					
					
1 (d)	6	PS	See alternative methods	Award 6 marks if correct answer given from correct methods and accurate values if working seen	
	<b>Alternative method 1 – Comparing costs</b>				
	1		6.50, 7.90, 8, 8.20, 9.80, .... or 13.90, 12.5, 10, 9.80, 8.20, .... OR $(8.20 + 9.80) \div 2$	OE Any full correct method to find median	H23a
	1		9	CAO median implies 1 <sup>st</sup> mark	H23a

1		12 × 2.205 OR 1 ÷ 2.205	OE Any full correct method to convert from kg to lb or from lb to kg	M14a	
1		26.46 (lbs in total) OR 0.45(351...) (kg per jar)	CAO total weight of honey in pounds or weight of honey in one jar in kg Implies 3 <sup>rd</sup> mark	N10b	
1		Their 9 × their 26 or 234 OR 12 ÷ their 0.45(351...) or 26.4(620...) AND their 9 × their 26 or 234 OR 240 ÷ their 26 or 9.23 (price to sell at)	OE Any full correct method Their 9 must be in the range [6.5, 13.9] Their 26 from rounding down number of pounds/jars from correct process must be × 2.205	N9b	
1		No AND (£)234 OR No AND (£)9.23 and (£)9	No supported by correct working FT Their values from fully correct methods	M13a	
<b>Alternative method 2 – Reverse process</b>					
1		6.50, 7.90, 8, 8.20, 9.80, .... or 13.90, 12.5, 10, 9.80, 8.20, .... OR (8.20 + 9.80) ÷ 2	OE Any full correct method to find median	H23a	
1		9	CAO median implies 1 <sup>st</sup> mark	H23a	
1		240 ÷ their 9 or 26.6(666...) or 27 (jars needed)	OE Any full correct method to work out number of jars needed Their 9 must be in the range [6.5, 13.9]	M13a	
1		12 × 2.205 OR their 27 ÷ 2.205	OE Any full correct method to convert	M14a	
1		26.46 (lbs) OR 12.2(448...) (kg)	CAO weight of honey in pounds or weight of honey in kg needed Implies 4 <sup>th</sup> mark	N10b	
1		No AND 27 (jars needed) and 26 (jars got) OR No AND 12.2(448...) (kg of honey needed)	No supported by correct working FT Their values from fully correct methods	N9b	
<b>1 (e)</b>	<b>3</b>	<b>PS</b>	16 (kg)	Award 3 marks if correct answer given from correct methods and accurate values if working seen	
	1		$\frac{(12 - 9)}{9 \times 100}$ or 33(.333...)(%)	OE Any full correct method to find percentage increase OE Fraction or decimal	N5b
	1		12 × their 0.33(.333...) (+12) or 4	OE Any full correct method to find the increase in weight or the weight for the next year FT Their 33(.333...)(%) OE from correct method Accept decimal values from rounding of 0.33(333...) eg range of 3.96, 3.999(96) – 4	N6a
	1		16 (kg)	CAO Accept decimal values from rounding of 0.33(333...) eg 15.96-16?	N5a

<b>(Section B) Activity 2: Hot tub</b>			<b>(Calculator Test)</b>		
<b>Q</b>	<b>Marks</b>	<b>UPS / PS</b>	<b>Process and Answer</b>	<b>Additional or Alternative Evidence (with guidance)</b>	<b>SC</b>
<b>2 (a)</b>	<b>2</b>	<b>UPS</b>	(1.5, 1) and (1.5, 4) OR (8.5, 1) and (8.5, 4)	Award 2 marks if correct answer given	
	1		(1.5, 1) or (1.5, 4) OR (8.5, 1) or (8.5, 4)	Any correct coordinate written or plotted correctly  Half square tolerance So 8.5 would be 8.25 – 8.75; 4 would be 3.75 – 4.25; 1.5 would be 1.25 – 1.75 and 1 would be 0.75 – 1.25	M22b
	1		(1.5, 1) and (1.5, 4) OR (8.5, 1) and (8.5, 4)	CAO Values need to be written on chart as well as plots Brackets not required on first or second mark.	M22b
<b>2 (b)</b>	<b>1</b>	<b>UPS</b>	$\frac{21}{170}$	CAO OE fraction Accept 21 out of 170 OE 21 over 170 Do not accept $\frac{10.5}{85}$	N8
<b>2 (c)</b>	<b>3</b>	<b>PS</b>	No AND (£)70.51 (actual saving) OR No AND (£)283.64 (proposed amount Keri pays now) OR No AND 24.(243...) (actual % saving)	Award 3 marks if correct answer given from correct methods and accurate values if working seen	
	1		249.99 ÷ 0.78 or (£)320.5(0) (actual original price) OR 80 ÷ 0.22 or (£)363.(636...) (proposed original price) OR $\left(\frac{80}{249.99 + 80}\right) \times 100$ OR $\left(\frac{80}{249.99 + 80}\right) \times 100$ or 75(.756...)(%)	OE Any full correct method to find actual or proposed original price or proposed percentage discount Accept 363.64 or 364 rounded from 363(.636...) or correctly rounded value of 75(.756...)	N6b
	1		Their 320.5 – 249.99 or 70(.51) (actual saving) OR their 363(.636...) × 0.78 or (£)283(.636...) (proposed amount Keri pays now) OR 24(.243...) (%) (actual % saving)	OE Any full correct method FT Their 320.5 or their 363(.636...) from correct process to find original price from price now or £80 savings 70.51 or 283(.636...) or 24(.243...) Implies 1 <sup>st</sup> mark 24(.243...) from 100 – 75(.756) or $\left(\frac{80}{249.99 + 80}\right) \times 100$	N6b
	1		No AND (£)70.51 (actual saving) OR No AND (£)283.64 (proposed amount Keri pays now) OR No AND 24.(243...) (actual % saving)	OE No supported by correct working Accept values rounded to nearest £  Award 1 mark for NO and 70 with use of 250 as functional rounding	N6b

<b>2 (d)</b>	<b>2</b>	<b>UPS</b>	12.4 (m <sup>2</sup> )	Award 2 marks if correct answer given from correct methods and accurate values if working seen	
	1		$4 \times 1.6 + \frac{3 \times 4^2}{8}$ or 6	OE Any full correct method to work out area	N3
	1		12.4 (m <sup>2</sup> )	CAO OE	M16a
<b>2 (e)</b>	<b>4</b>	<b>PS</b>	1.28 (hours)	Award 4 marks if correct answer given from correct methods and accurate values if working seen	
	1		$3.14 \times 70 \times 70 \times 60$ or 923 160 (cm <sup>3</sup> )	OE Any full correct method to work out volume of a cylinder Accept any consistent units Accept [923 160, 923 628.241] from use of $\pi$ button and/or rounding	M17a
	1		Their $923\ 160 \div 1000 \div 0.2$ or 4615.8 (seconds) OR $0.2 \times 60 \times 60$ OR 720 (litres per hour)	OE Any full correct method to find the number of seconds or rate per hour FT Their [923 160, 923 628.241] from correct method to find volume of cylinder Accept [4615.8, 4618.15] from use of $\pi$ button and/or rounding [4615.8, 4618.15] implies 1 <sup>st</sup> mark	M15
	1		Their $4615.8 \div 60 \div 60$ or 1.28(216...) (hours) OR Their $923\ 160 \div 1000 \div$ their 720 or 1.28(216...) (hours)	OE Any full correct method to find the time taken FT Their 4615.8 from an attempt to find volume of cylinder and number of seconds to fill hot tub using a multiplication Only accept use of $3.14 \times 70 \times 70 \times 70$ or $3.14 \times 70 \times 60 \times 60$ or $3.14 \times 60 \times 60 \times 60$ FT Their 923 160 from correct method for finding volume and their 720 from correct method to find rate per hour Accept [1.2821, 1.28282] from use of $\pi$ button and/or rounding 1.282(...) implies 1 <sup>st</sup> two marks	N11a
	1		1.28 (hours)	CAO from correct methods and accurate values	N9b
<b>2 (f)</b>	<b>3</b>	<b>PS</b>	25.956 (g) or 26 (g)	Award 3 marks if correct answer given from correct methods and accurate values if working seen	
	1		$309 \div 250 \times 1.5$ or 1.854 (tablespoons) OR $14 \times 1.5$ or 21 (g in 1.5 tablespoons) OR $14 \times 1.5 \div 250$ or 0.084 (g per gallon)	OE Any valid method to begin to work with proportion	N11a
	1		Their $1.854 \times 14$ OR $309 \div 250 \times$ their 21 OR their $0.08(4) \times 309$ OR $309 \div 250 \times 1.5 \times 14$	OE Any full correct method to work with proportion FT their 1.854 or their 21 or their 0.084 from correct method to work with proportion	N11a
	1		25.956 (g) or 26 (g)	CAO Accept any functional rounding	N11a

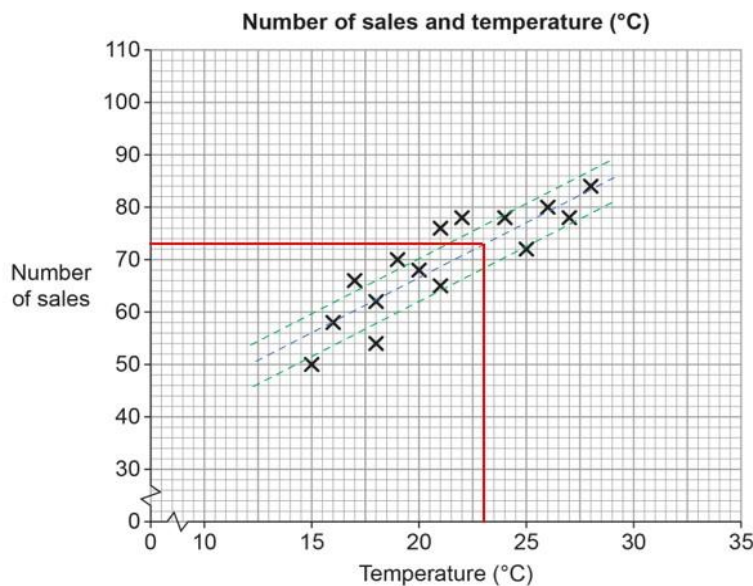
Activity 3:		Ice cream shop		(Calculator Test)	
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
3 (a)	1	UPS	45(°)	CAO	M22a
3 (b)	3	PS	See below		
	1		48 ÷ 34 or 1(.411...) OR 48 ÷ 15 or 3(.2) OR 70 ÷ 34 or 2(.058...) OR 70 ÷ 15 or 4(.666) OR 137 ÷ 14 or 9(.78...)	OE Any correct method for one valid comparison of lengths	M20
	1		1 × 4 × 9 or 36 OR 2 × 3 × 9	FT Their values correctly rounded down	N9b
	1		54 (tubs)	CAO Supported by correct working Award 1 mark only for 54 seen without working	M20
3 (c)	4	PS	See below	Award 4 marks if correct answer given from correct methods and accurate values if working seen	
<b>Alternative method 1 – Percentage per ice cream cone</b>					
1			(£)3.5(0)	CAO mode	H23b
1			20.4(0) ÷ 40 + 0.06 or (£)0.57 OR 2040 ÷ 40 + 6 or 57(p)	OE Any full method to find the cost of one scoop of ice cream and cone	M13a
1			5.34 × their 0.57 or (£)3.04(38) OR their 0.57 × 5.34 + 0.57 or 6.34 × their 0.57 or (£)3.61(38) OR $\frac{(\text{their } 3.5(0) - \text{their } 0.57)}{\text{their } 0.57} \times 100$ or 514(.035...) (%) OR their 3.5(0) ÷ 6.34 or £)0.55(205...)	OE Any full correct method to find 534% of cost of one scoop and cone or to find figures to compare Accept method worked in pence Their 3.5(0) must be in the range [2.99, 3.80] FT Their (£)0.57 OE from correct method to find cost of one scoop of ice cream and cone (£)3.04(38) or (£)3.61(38) OE or 514(.035...) (%) implies 2 <sup>nd</sup> mark (£)0.55(205...) OE implies 1 <sup>st</sup> mark	N5a
1			No AND (£)3.61(38) and (£)3.50 OR No AND 514(.035...) (%) OR No AND (£)0.55(205...) and (£)0.57	OE No supported by correct working	M13b



**Alternative method 2 – Percentage per ice cream tub**

1		(£)3.5(0)	CAO mode	H23b
1		20.4(0) + (40 × 0.06) or (£)22.8 OR 2040 + (40 × 6) or 2280(p)	OE Any full method to find the cost of 40 ice cream cones	M13a
1		5.34 × their 22.8 or (£)121.75(2) OR 6.34 × their 22.8 or (£)144.55(2) OR $\frac{\text{their } 3.5(0) \times 40 - \text{their } 22.8}{\text{their } 22.8} \times 100$ or 514(.035...) (%) OR their 3.5(0) × 40 ÷ 6.34 or (£)22.08(201...)	OE Any full correct method to find 534% of cost of forty scoops and cones or to find figures to compare Accept method worked in pence Their 3.5(0) must be in the range [2.99, 3.80] FT their (£)22.8 OE from correct method to find cost of forty scoops of ice cream and cones (£)121.75(2) or (£)144.55(2) OE or 514(.035...) (%) implies 2 <sup>nd</sup> mark (£)22.08(201...) OE implies 1 <sup>st</sup> mark	N5a
1		No AND (£)144.55(2) and (£)140 OR No AND 514(.035...) (%) OR No AND (£)22.08(201...) and (£)22.8(0)	OE No supported by correct working 140 FROM 3.5(0) × 40	M13b
<b>3 (d)</b>	<b>1</b>	<b>UPS</b> (Strong) positive (correlation) OR Number of sales increases as temperature increases	OE Any similar valid statement to describe relationship	H28
<b>3 (e)</b>	<b>2</b>	<b>PS</b> See below	Award 2 marks if correct answer given	
<b>3 (e)(i)</b>	1	Draws line of best fit	See additional guidance Line must pass through (15, [52, 60]) and (30, [84, 92])	H28
<b>3 (e)(ii)</b>	1	[69, 77] (sales)	If line of best fit attempted FT Their line If no line of best fit attempted, values in range [69, 77] implies 1 <sup>st</sup> mark from <b>3 (e) (i)</b>	H28

**Additional guidance**



<b>3 (f)</b>	<b>2</b>	<b>PS</b>	No AND (£)240	Award 2 marks if correct answer given from correct methods and accurate values if working seen	
	1		$((1 \times 160) + (5 \times 200) + (7 \times 240) + (7 \times 280)) (\div 20)$ or $(160 + 1000 + 1680 + 1960) (\div 20)$ or 4800 or 240	OE Any full correct method to find sum of midpoints multiplied by frequencies or mean estimate of grouped frequencies Allow one error in use of midpoints	H24
	1		No AND (£)240 OR No AND (£)4800 and (£)5000	OE No supported by correct working 5000 from $250 \times 20$	H24
<b>3 (g)</b>	<b>2</b>	<b>UPS</b>	0.25	Award 2 marks if correct answer given from correct methods and accurate values if working seen	
	1		$\frac{3+5}{(1+2+3+4+5+7+10)}$ or $\frac{8}{32}$	OE Any full correct method to express as a fraction, decimal or percentage	H26
	1		0.25	FT their fraction $\frac{a}{b}$ for $0 < \frac{a}{b} < 1$ and $b = 32$ Accept correctly rounded value or truncated. Note: $\frac{5}{32} = 0.15(625)$	H27

Activity 4: Cycling			(Calculator Test)		
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
4 (a)	2	UPS	$\frac{66}{100}$	Award 2 marks for correct answer given from correct methods and accurate values if working seen	
	1		100 – 34 or 66 OR 1 – (34 ÷ 100) or 0.66 OR (100 – 34) ÷ 100	OE Fraction	H27
	1		$\frac{66}{100}$	CAO OE Fraction	H27
4 (b)	2	PS	15 (minutes)	Award 2 marks if correct answer given from correct methods and accurate values if working seen	
	1		18 × 20 ÷ 24 OR 20 ÷ 60 or 0.33(333...) AND their 0.33(333...) × 18 or 6 (miles) AND 6 ÷ (24 ÷ 60)	OE Any full correct method to work with inverse proportion FT their 0.33(333...) from correct method Accept use of rounded decimal to at least two decimal places	M15
	1		15 (minutes)	CAO Accept 14.85 or 14.9 from use of 0.33 or 14.985 or 14.99 from use of 0.333	N11b
4 (c)	4	PS	See alternative methods	Award 4 marks if correct answer given from correct methods and accurate values if working seen	
	<b>Alternative method 1 – Compare % and amounts at the end of year 2</b>				
	1		441.6(0) ÷ 12 × 5 or 184 OR 441.6(0) ÷ 12 × 7 or 257.6(0)	OE Any full correct method to find $\frac{5}{12}$ or $\frac{7}{12}$ of £441.6(0)	N11a
	1		(441.6(0) – their 184) × 0.92 or their 257.6(0) × 0.92 or 236(.992)	OE Any full method to find value after 2 years FT Their 184 and their 257.6(0) from correct method to find value after 1 year Accept 237 from correct methods 236(.992) implies 1 <sup>st</sup> mark	M13b
	1		Their 236.992 ÷ 441.6(0) × 100 or 53.6(66...)(%) OR 0.53 × 441.6(0) or (£)234(.048)	OE Any full method to find comparable figures FT Their 236.992 ... from an attempt to work with proportion and work out value after 2 years Accept any correct rounding of 53.6(66...) 53.6(66...) implies 1 <sup>st</sup> two marks	N5b
	1		No AND 53.6(66...)(%) OR No AND (£)236(.992) or (£)237 and (£)234(.048)	OE No supported by correct working Accept correct rounding of correct answers	M13b

<b>Alternative method 2 – Compare amounts at end of year 1</b>				
1		441.6(0) ÷ 12 × 5 or 184 OR 441.6(0) ÷ 12 × 7 or (£)257(.60)	OE Any full correct method to find $\frac{5}{12}$ or $\frac{7}{12}$ of £441.6(0)	N11a
1		441.60 × 0.53 or (£)234(.048)	OE Any full correct method to find 53% of cost price	M13b
1		Their (£)234(.048) ÷ 0.92 or (£)254(.40)	OE Any full method to find comparable figures	N5b
1		No AND (£)257(.60) and (£)254(.40)	OE No supported by correct working Accept correct rounding of correct answers	M13b
<b>Alternative method 3 – Compare % decrease in year 2</b>				
1		441.6(0) ÷ 12 × 5 or 184 OR 441.6(0) ÷ 12 × 7 or (£)257(.60)	OE Any full correct method to find $\frac{5}{12}$ or $\frac{7}{12}$ of £441.6(0)	N11a
1		441.60 × 0.53 or (£)234(.048)	OE Any full correct method to find 53% of cost price	M13b
1		$\frac{\text{their } 257(.60) - \text{their } 234(.048)}{\text{their } 257(.60)} (\times 100)$ or 0.09(14...)	OE Any full correct method to find percentage decrease in year 2 using 53% of (£)441.6(0) Their 257(.60) and their 234(.08) for correct method to find $\frac{7}{12}$ and 53%	N5b
1		No AND 9(.14...)(%)	OE No supported by correct working Accept correct rounding of correct answers	M13b
<b>Alternative method 4 – Compare fraction decrease in year 1</b>				
1		441.60 × 0.53 or (£)234(.048)	OE Any full correct method to find 53% of cost price	M13b
1		Their (£)234(.048) ÷ 0.92 or (£)254.4(0)	OE Any full complete method to find the value after year 1 working backwards	N11a
1		$\frac{\text{their } 254.4(0)}{441.6(0)}$ or $\frac{53}{92}$ or 0.576(08...) OR 7 ÷ 12 or 0.583(33..)	OE Any full method to find comparable figures for fraction decrease from cost price to year 1	N5b
1		No AND 0.576(08...) and 0.583(33...) OR No AND $\frac{159}{276}$ and $\frac{161}{276}$	OE No supported by correct working Accept correct rounding of correct answers Accept comparison of fraction, decimal or percentage form	M13b
<b>Alternative method 5 – Compare percentages</b>				
1		$1 - \frac{5}{12}$ or $\frac{7}{12}$ AND $1 - 0.08$ or $0.92$ or $100 - 8$ or $92(\%)$	OE Any correct method to find fraction and percentage remaining	N11a

	1		$7 \div 12 \times 0.92$ or 0.536(666...) or 0.537	OE Any correct method to find fraction of percentage reduction Do not allow follow through Accept any correct rounding of 0.536(666...) 0.536(666...) implies 1 <sup>st</sup> mark	N5b
	1		Their 0.536(666...) $\times 100$ or 53.6(666...) OR 0.53	OE Any correct method to find figures to compare FT Their 0.536(666...) from correct method 53.6(666...) 1 <sup>st</sup> two marks	N11a
	1		No AND 53.6(666...) (%) OR No AND 0.536(666...) and 0.53	OE No supported by correct working Accept correct rounding of correct answers	M13b
<b>4 (d)</b>	<b>2</b>	<b>UPS</b>	Point plotted at (5, 3)	Award 2 marks if correct answer given	
	1		$2.5 \div 50\,000$ ( $\times 100\,000$ ) or 0.000005 or 5 (grid squares)	OE Any correct method to apply scale Award this mark if plot seen at (0,8) (10,8) (5,13)	M18b
	1		Point plotted at (5, 3)	CAO	M19
<b>4 (e)</b>	<b>5</b>	<b>PS</b>	See alternative methods	Award 5 marks if correct answer given from correct methods and accurate values if working seen	
<b>Alternative method 1 – Comparing BMI values</b>					
	1		$(5 +) 11 \div 12$ or 0.9(166...) or 5.9(166...)	OE Any full correct method to convert inches to feet	N11a
	1		1.7(75) (metres)	Uses conversion graph to convert 5.9(16...) feet to metres Accept [1.7, 1.804] Answer in range [1.7, 1.804] implies 1 <sup>st</sup> mark	M14b
	1		$\frac{75}{(\text{their } 1.775)^2}$	OE Correct substitution into formula Their 1.775 must be in the range [1.7, 1.804]	N3
	1		23(.804...)	Accept [23.046, 25.952] from correct use of formula [23.046, 25.952] implies 1 <sup>st</sup> three marks	N12
	1		Yes AND [23(.046...), 24.9] OR No AND (24.9..., 25.952]	OE Yes / No supported by correct working FT their value from correct substitution into formula Accept any valid comment	M14b
<b>Alternative method 2 – Comparing mass</b>					
	1		$(5 +) 11 \div 12$ or 0.9(166...) or 5.9(166...)	OE Any full correct method to convert inches to feet	N11a
	1		1.7(75) (metres)	Uses conversion graph to convert 5.9(16...) feet to metres Accept [1.7, 1.804] Answer in range [1.7, 1.804] implies 1 <sup>st</sup> mark	M14b

1		18.5 × their 1.7(75) <sup>2</sup> or 58(.286...) (kg) OR 24.9 × their 1.7(75) <sup>2</sup>	OE Correct substitution of either BMI value and their height in metres into the formula FT Their 1.7(75) from correct method to convert Their 1.775 must be in the range [1.7, 1.804] Accept [53.4, 60.21] for 58(.286...) 58(.286...) implies 1 <sup>st</sup> two marks	N3
1		78(.450...) (kg)	CAO Accept [71.961, 81.035] from correct use of formula and range [1.7, 1.804]	N12
1		Yes AND [71.961, 75] (kg) OR No AND (75, 81.035] (kg)	OE Yes/No supported by correct working Accept any valid comment	M14b
<b>Alternative method 3 – Comparing height (Not expected at Level 2)</b>				
1		1(.013...) (m) OR 1.73(552) (m)	CAO 1(.013...) or 1.73(552) implies 1 <sup>st</sup> mark	N12
1		5.694 (min height in ft within BMI range)	Uses conversion graph to convert 1.73(552) metres to feet Accept [5.6, 5.8] implies 1 <sup>st</sup> mark	M14b
1		(5+) 11 ÷ 12 or 0.9(166...0) or 5.9(166...) (ft) OR their 0.694 × 12 or 8(.328) (inches) or 5 ft 8(.328) (inches)	OE Any full correct method to convert inches to feet FT Their 0.694 from correct methods Accept values in range (5 ft) [7.2, 9.6] (inches)	N11a
1		Yes AND [5 ft 7(.2) (inches), 5 ft 9(.6) (inches)] OR Yes AND [7(.2) (inches), 9(.6) (inches)] and 11 (inches) OR Yes AND 5.9(166...) (ft) and 5.6(94) (ft)	OE Yes supported by correct working Accept [5.6, 5.8] (ft) Accept any valid comment	M14b