



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

Mark scheme: P001761

v1.8 Post refresher standardisation 30.01.2023

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) followed by
- 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 ½.
CAO	Correct answer only.
Their	'Their' refers to the learners' own derived values.
Seen	Seen refers to the requirement to see the stated value in the learner's response or working out.
Imp	Implied refers to the learner's response implying correct working out used but not seen.
Brackets	Indicates units are not required on final answers or for answers seen within working.
BOD	Benefit of doubt where learner handwriting may be difficult to interpret but previous working may indicate correct final answer.
Shaded	Indicates requirements for full marks to be awarded.
Coloured SC box	On-screen only: 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.

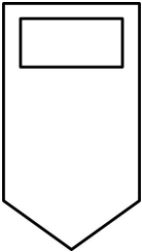

Online: Onscreen marking tools (i.e. ticks, crosses) marks should be applied to indicate application throughout the learner script, in addition to marks being recorded numerically within the corresponding 'Learning Outcomes' box, indicated by the relevant Subject Content reference.

Annotation	Explanation and use
Tick	Used to indicate correct values/method or final answer.
Red highlight	Used to indicate where the learner has made an error in either the value used or an incorrect calculation.
Red line box	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: P001761			Version: 1.8 30.1.2023	Pass mark: 35	
(Section A) Activity 1: Recruitment agency (Non-calculator Test)					
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
1 (a)	2	UPS	18.75(%)	Award 2 marks if correct answer given	
	1		$15 \times 100 \div 80$	OE Any full correct method $\times 100$ may be implied by their answer	N5b
	1		18.75(%)	CAO Award if rounded to 19 or 18.8 with 18.75 seen	N5b
1 (b)	1	UPS	0.2, 0.2042, 0.24, 0.2402	Allow Q4, Q1, Q3, Q2	N9a
1 (c)	2	PS	See below		
	1		6.25 and 6.2 OR $\frac{375}{60}$ and $\frac{372}{60}$ OR 625(%) and 620(%)	OE any full correct method Award if works with 2 consistent values	N7b
	1		Yes AND 6.25 and 6.2 OR Yes AND $\frac{375}{60}$ and $\frac{372}{60}$ OR Yes AND 625(%) and 620(%)	OE Yes or valid comment implying yes supported by correct working	N7b
1 (d)	5	PS	(£)9.50	Award 5 marks if correct answer given	
	1		$3 \times (2000 \div 5) + 320$	OE full substitution	N3
	1		1520	CAO Implies 1 st mark	N12
	1		160	Mode identified	H23b
	1		Their 1520 \div their 160 or 9.5	Their 1520 must come from correct substitution into formula Their 160 must be in range [160,165] OE any full correct method	N11a
	1		(£)9.50	FT their values from correct methods Must be a correct to 2dp result for their their 1520 \div their 160 2 dp required	M13a
1 (e)	1	UPS	63.254	CAO	N10b
1 (f)	4	PS	See below		
	1		21 or 22	At least one correct mean	H25

	1		23 or 20	At least one correct median	H25
	1		21 and 22 AND 23 and 20	If 1 st mark and 2 nd mark not awarded, award 1 mark for correct method for at least one mean or median	H25
	1		Valid comment for both mean AND median	FT their means and medians if in range of 14 – 26 and 17 – 29	H25

(Section B) Activity 2: Cargo ships (Calculator Test)

Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
2 (a)	1	UPS	11 107 000 000	CAO	N1a
2 (b)	2	UPS	See below		
	1			Correct plan view Allow the rectangle to touch the edges of the pentagon Accept any orientation Mark intention	M21
	1			Correct side elevation Accept any orientation Mark intention Allow the rectangle placed in line with the vertical line of the trapezium	M21
2 (c)	5	PS	3630 (tonnes)	Award 5 marks if correct answer given	
	Alternative method 1 (Changing feet into metres)				
	1		$40 \times 12 \div 39$ or 12.3(0...) OR $8 \times 12 \div 39$ or 2.4(6...) OR $8.5 \times 12 \div 39$ or 2.6(1...) OR $39 \div 12$ or 3.25	OE any full correct method	M14a
	1		$40 \times 12 \div 39$ or 12.3(0...) AND $8 \times 12 \div 39$ or 2.4(6...) AND $8.5 \times 12 \div 39$ or 2.6(1...)	OE any full correct method Allow use of their 3.25 as conversion factor which must come from $39 \div 12$ 12.3(0...), 2.4(6...) and 2.6(1...) implies 1 st mark	M14a
1		25 ÷ their 12.3(...) or 2.(03...) OR 25 ÷ their 2.4(6..) or 10.(15...)	Their 12.3(...), 2.4(6...), 2.6(1...) must come from correct process to convert feet into metres	N11a	

		OR 15 ÷ their 2.4(6..) or 6.(09...) OR 29 ÷ their 2.6(1..) or 11.(08...)	OE any full correct method 2 or 10 or 6 or 11 implies mark 1 2 and 6 and 11 implies first 2 marks Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number	
1		(Their 2 × their 6 × their 11) × 27.5	Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number Accept 137 × 27.5, if 137 derived from volume calculation or 136 × 27.5 from rounding Accept 110 × 27.5, if 110 derived from calculation of load in different orientation	N9b
1		3630 (tonnes)	CAO	N11a
Alternative method 2 (Changing metres into feet)				
1		25 × 39 ÷ 12 or 81.25 OR 15 × 39 ÷ 12 or 48.75 OR 29 × 39 ÷ 12 or 94.25 OR 39 ÷ 12 or 3.25	OE any full correct method	M14a
1		25 × 39 ÷ 12 or 81.25 AND 15 × 39 ÷ 12 or 48.75 AND 29 × 39 ÷ 12 or 94.25	OE any full correct method Allow use of their 3.25 as conversion factor which must come from 39 ÷ 12 81.25, 48.75 and 94.25 implies 1 st mark	M14a
1		Their 81.25 ÷ 40 or 2.(03...) OR their 81.25 ÷ 8 or 10.(15...) OR their 48.75 ÷ 8 or 6.(09...) OR their 94.25 ÷ 8.5 or 11.(08...)	Their 81.25, 48.75, 94.25 must come from correct process to convert metres into feet OE any full correct method 2 or 10 or 6 or 11 implies mark 1 2 and 6 and 11 implies 1st 2 marks Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number	N11a
1		(Their 2 × their 6 × their 11) × 27.5 or 3630	Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number Accept 137 × 27.5, if 137 derived from volume calculation or 136 × 27.5 from rounding Accept 110 × 27.5, if 110 derived from calculation of load in different orientation	N9b
1		3630 (tonnes)	CAO	N11a
Alternative method 3 (Working in inches)				
1		25 × 39 or 975 OR 15 × 39 or 585 OR 29 × 39 or 1131 OR 40 × 12 or 480 OR 8 × 12 or 96	OE any full correct method	M14a

			OR 8.5 × 12 or 102		
	1		25 × 39 or 975 AND 15 × 39 or 585 AND 29 × 39 or 1131 OR 40 × 12 or 480 AND 8 × 12 or 96 AND 8.5 × 12 or 102	OE any full correct method Award for any three correct conversions, eg. 2 from metres to inches and 1 from feet to inches	M14a
	1		975 ÷ 480 or 2.(03...) OR 585 ÷ 96 or 6.(09...) OR 1131 ÷ 102 or 11(.08...)	Their 975, 480, 585, 96, 1131 and 102 must come from correct process to convert metres and feet into inches OE any full correct method 2 or 10 or 6 or 11 implies 1 st mark 2 and 6 and 11 implies 1st 2 marks Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number	N11a
	1		(Their 2 × their 6 × their 11) × 27.5 or 3630	Their 2, 6, 11 must come from correct method and include figures rounded down to the nearest whole number Accept 137 × 27.5, if 137 derived from volume calculation or 136 × 27.5 from rounding Accept 110 × 27.5, if 110 derived from calculation of load in different orientation	N9b
	1		3630 (tonnes)	CAO	N11a
2 (d)	4	PS	Yes and 8.(4525) (people) OR Yes and 4.2(2... people) and 4 (people) OR Yes and 26(.66...m ²) and 28(.175 m ²) OR Yes and 3.5(...) (people) AND 3.3 (people)	Award 4 marks if correct answer given	
Alternative method 1 (using area of triangle)					
	1		(6.1 – 5.4) × 4.9 × 0.5 or 1.715 or 1.72 OR (6.1 – 5.4) × (4.9 ÷ 2) × 0.5 or 0.8575	OE any full correct method to find the area of a triangle	M16b
	1		Their 1.715 + (5.4 × 4.9) or (2 × their 0.8575) + (5.4 × 4.9) or (6.1 × 4.9) – (2 × their 0.8575) or 28.175 OR their 0.8575 + (5.4 × 4.9 ÷ 2) or 14.0875	OE Any full correct method to find area of shape or one half of shape Their 1.715 or their 0.8575 must come from correct method to calculate the area of a triangle 28.175 or 14.0875 implies first 2 marks	M16b
	1		Their 28.175 ÷ (10 ÷ 3) or 8.4(525) OR their 14.0875 ÷ (10 ÷ 3) or 4.2(2...) OR (10 ÷ 3) × 8 or 26(.66...) AND their 28.175	OE Any full correct method to find actual number of people or to find figures to compare Their 28.175 or their 14.0875 must come from correct method to calculate the total area or half of the area	N11a

			8.4(525) or 4.2(2...) or 14.0875 or 26(.66...) and 28.175 implies first 2 marks Award mark for 5 and an equivalent statement clarifying 13.2 m ² needed for 4 people implies 14.0(875 m ²) fits less than 4 people	
1		Yes and 8.(4525) (people) OR Yes and 4.2(2... people) and 4 (people) OR Yes and 26(.66...m ²) and 28(.175 m ²)	OE Yes and 8 people must be supported by correct working Award if 8 implied by valid comment, e.g. 6 (from using area of rectangle) seen with enough for 2 more people (from using area of triangle)	N11a
Alternative method 2 (trapezium – not expected)				
1		$0.5 \times (4.9 \div 2) \times (6.1 + 5.4)$ OR $(4.9 \div 2) \times (6.1 + 5.4)$	OE any full correct method to find area of a trapezium	M16b
1		14.0875 OR 28.175	Their 14.0875 or 28.175 must come from correct method 14.0875 or 28.175 implies 1 st mark	M16b
1		Their $28.175 \div (10 \div 3)$ or 8.4(525) OR their $14.0875 \div (10 \div 3)$ or 4.2(2...) OR $(10 \div 3) \times 8$ or 26(.66...) AND their 28.175	OE Any full correct method to find actual number of people or to find figures to compare Their 28.175 or their 14.0875 must come from correct method to calculate the total area or half of the area 8.4(525) or 4.2(2...) or 14.0875 or 26(.66...) and 28.175 implies first 2 marks Award mark for 5 and an equivalent statement clarifying 13.2 m ² needed for 4 people implies 14.0(875 m ²) fits less than 4 people	N11a
1		Yes and 8.(4525) (people) OR Yes and 4.2(2... people) and 4 (people) OR Yes and 26(.66...m ²) and 28(.175 m ²)	OE Yes supported by correct working	N11a
Alternative method 3				
1		$0.5 \times (4.9 \div 2) \times (6.1 + 5.4)$ OR $(4.9 \div 2) \times (6.1 + 5.4)$	OE any full correct method to find area of a trapezium	M16b
1		14.0875 OR 28.175	Their 14.0875 or 28.175 must come from correct method 14.0875 or 28.175 implies 1 st mark	M16b
1		Their $28.175 \div 8$ or 3.5 AND $10 \div 3$ or 3.3(...)	28.175 implies 1 st two marks Their 28.175 must come from correct method to calculate the total area	N11a
1		Yes and 3.5(...) (people) AND 3.3 (people)	OE Yes supported by correct working	N11a
2 (e)	3	PS	276 (hours)	Award 3 marks if correct answer given
	1		24	CAO
	1		$6631 \div$ their 24 or 276.(291...)	Their 24 must be values in range [19, 27.5]

	1		276 (hours)	FT their 24 must be value in range [19, 27.5] Only award FT if 1 st mark not awarded	N9b	
Activity 3: Driveway (Calculator Test)						
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC	
3 (a)	2	PS	Yes AND (£)3807.47 or (£)3807	Award 2 marks if correct answer given		
	1		3500×1.043^2 or 3807.4715	OE any full correct method	M13b	
	1		Yes AND (£)3807(.47) or (£)3807	OE Yes supported by correct working 2 decimal places required	M13b	
3 (b)	4	PS	No AND 56(.52) or 57 OR No AND 1413 and 1500	Award 4 marks if correct answer given		
	Alternative method 1 (scale first)					
	1		2.25×200 or 450	OE any full correct method of using the scale Accept any use of consistent units	M18a	
	1		$3.14 \times$ their 450 or 1413(cm)	OE any full correct method to find semi-circumference Allow use of π Accept [1413, 1413.71...]	M16a	
	1		Their $1413 \div (250 \div 10)$ or 56.52 OR $60 \times (250 \div 10)$ or 1500	OE any full correct method Their 1413 must come from correct method to calculate the semi-circumference 56.52 implies first 2 marks Accept [56.52, 56.55]	N11a	
	1		No AND 56(.52) or 57 OR No AND 1413 and 1500	OE No supported by valid working Accept [56.52, 57] or [1413, 1413.71...] implies 1 st mark	N11a	
	Alternative method 2 (circumference first)					
	1		3.14×2.25 or 7.065	OE any full correct method Allow use of π Accept [7.065, 7.068] Accept any use of consistent units	M16a	
	1		Their 7.065×200 or 1413	OE any full correct method of using the scale Accept [1413, 1413.71...]	M18a	
	1		Their $1413 \div (250 \div 10)$ or 56.52 OR $60 \times (250 \div 10)$ or 1500	OE any full correct method Their 1413 must come from correct method to calculate the semi-circumference 56.52 implies first 2 marks Accept [56.52, 56.55]	N11a	
	1		No AND 56(.52) or 57 OR No AND 1413 and 1500	OE No supported by valid working Accept [56.52, 57] or [1413, 1413.71...] implies 1 st mark	N11a	
	3 (c)	3	PS	(£)2176.56 or (£)2176.57	Award 3 marks if correct answer given	
		1		$(50 \times 31) + (2.5 \times 375)$ or 2487.5	OE any full correct method	M13a

	1		Their 2487.5×0.875 or 2176.5625	OE any full correct method 2487.5 must come from correct method 2176.5625 implies 1 st mark	M13b
	1		(£)2176.56 or (£)2176.57	CAO	M13b
3 (d)	2	PS	Yes AND 172.5 (°) OR Yes AND 357.5(°) and 360(°)	Award 2 marks if correct answer given	
	1		$360 - 90 - 90 - 7.5$ or 172.5 OR $170 + 90 + 90 + 7.5$	OE any full correct method	M22a
	1		Yes AND 172.5(°) OR Yes AND 357.5(°) and 360(°)	OE Yes supported by correct working	M22a
3 (e)	2	UPS	See below		
	1		(4, - 3) indicated correctly	CAO	M19
	1		(-1, -4) indicated correctly	CAO FT their point C to make a parallelogram	M22b
3 (f)	2	UPS	(£)45	Award 2 marks if correct answer given	
	1		$36.9(0) \div 0.82$	OE any full correct method	N6b
	1		(£)45	CAO	N6b

Activity 4: Care work (Calculator Test)

Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
4 (a)	4	PS	(£)376.39 or (£)376.40 or (£)372.40 or (£)376.31 or (£)376.12	Award 4 marks if correct answer given	
	Alternative method 1				
	1		$(37 \times 5) + (40 \times 4) + (43 \times 3) + (46 \times 2)$ or $185 + 160 + 129 + 92$ or 566	Midpoints must be used	H24
	1		40.4(...)	CAO Accept 40.43	H24
	1		$9.31 \times$ their 40.4(.2..) or 376.39	OE any full correct method Their 40.4(.2...) can be from consistent use of upper or lower bounds and $\div 14$ or $\div 4$	M13a
	1		(£)376.39	Allow (£)376.40 or (£)372.40 or (£)376.31 or (£)376.12 2 dp required	M13a
	Alternative method 2				
1		Any two of: 37×9.31 or 344.47 40×9.31 or 372.4 43×9.31 or 400.33 46×9.31 or 428.26	Award 1 mark for any two mid points $\times 9.31$	M13a	

	1		(their 344.47×5) + (their 372.4×4) + (their 400.33×3) + (their 428.26×2) or 5269.46	OE Any full correct method Their values must come from correct method 5269.46 implies 1 st mark	H24
	1		Their $5269.46 \div 14$	OE any full correct method 5269.46 must come from correct method Accept if $\div 4$ used	H24
	1		(£)376.39	Allow (£)376.40 or (£)372.40 2 dp required	M13a
4 (b)	4	PS	See below		
	1		13, 14, 15, 16, 18, ... or 19, 19, 18, 18, 16 OR (16 + 18) \div 2	OE any full correct method	H23a
	1		17	CAO implies 1 st mark	H23a
	1		$\frac{18 - \text{their } 17}{18} \times 100$	OE any full correct method Their 17 can be any value between 13 and 19	N6a
	1		5(.55...)(%) or -5(.55...)(%) or 6(%)	FT their 17 from correct method for median calculation Accept any correct rounding or truncating	N6a
4 (c)	2	UPS	31.25(%)	Award 2 marks if correct answer given	
	1		$\frac{5}{16}$	OE	H26
	1		31.25(%)	FT their fraction providing the numerator is 5 or the denominator is 16 Award if rounded to 31(%) with 31.25 seen	H27
4 (d)	1	UPS	$\frac{104}{120}$ or $\frac{13}{15}$	OE	N8
4 (e)	4	PS	No AND (£)484.54 or (£)484.55 OR No AND (£)734(.16) and (£)757(.57) or (£)757(.58)	Award 4 marks if correct answer given	
	1		10.5 \times 1.04 or 10.92 OR 10.5 \times 0.04 or 0.42 OR 46 \times 38 \times 10.50 \times 1.04 or 19088.16 OR 46 \times 38 \times 10.50 \times 0.04 or 734.16 OR 0.04 \times 0.66 or 0.0264	OE any full correct method	N6a
	1		(Their 10.92 – 10.5) \times 38 \times 46 OR their 0.42 \times 38 \times 46 OR their 19088.16 – (46 \times 38 \times 10.5) OR 38 \times 46 \times their 0.0264 or 46.1472	OE any full correct method Their 10.92 and 0.42 must come from correct percentage method 734.16 or 46.1472 implies 1 st mark	M13a
	1		Their 734.16 \times 0.66 or 484.54(56) or 484.55 OR 500 \div 0.66 or 757(.575...)	OE any full correct method Their 734.16 must come from correct method to find total annual pay increase 484(.5456) implies 1 st three marks	N5a
	1		No AND (£)484.54 or (£)484.55	OE No supported by correct working	M13a

			OR No AND (£)734(.16) and (£)757(.57) or (£)757(.58)		
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