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

Mark scheme: P001441
v1.5 Post standardisation March 2022

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 alterative 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.

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.

3

(Section A) Activity 1:	Shopping centre	(Non-calculator Test)

Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
1 (a)	2	UPS	$\frac{11}{40}$	Award 2 marks if correct answer given	
	1		$\frac{24}{40}$ and $\frac{5}{40}$ seen OR $\frac{29}{40}$ seen	OE	N7a
	1		$\frac{11}{40}$	CAO	N7a
1 (b)	5	PS	See below		
	1		$(7 - 2) \times (12 - 8) \times 0.5$ or 10 OR $(8 + 12) \times 0.5 \times (7 - 2)$ or 50	OE any method to work out area of triangle or trapezium	M16b
	1		74 (m²)	CAO Implies 1st mark	M16b
	1		67.6	CAO	H23a
	1		Their 67.6 × 1.12 or 67.6 + 8.112 or 75.712 OR Their 74 ÷ 1.12 or 66.0(7..) OR 74 – 67.5 or 6.5 OR 67.6 x 0.12 or 8.112	Their 67.6 must come from correct method to find the median Their 74 must come from correct method to find the total area OE	N6a
	1		No AND 74 (m²) and 75.712 (m²) OR No AND 67.6 (m²) and 66.0(7..) (m²) or 66.1 (m²) OR No AND 8.1(12) and 6.4	OE No with supported working	N6a
1 (c)	2	UPS	(£)13243.20	Award 2 marks if correct answer given	

	1		27.59 × 40 × 12 or 13243.2	OE	M15
	1		(£)13243.20	CAO 2 dp required	M13a
1 (d)	**3**	**PS**	(£)190	Award 3 marks if correct answer given	
	1		(0.015 × 38000) ÷ 3	OE any full correct method	N3
	1		570	Implied by 190	N10b
	1		(£)190	CAO	N3
1 (e)	**3**	**PS**	See below		
	1		23.2 or 23 200	CAO	H25
	1		27.1 or 27 100	CAO	H25
	1		Valid comparison of both mean and range e.g. the mean number of shoppers this week was greater than last week, but the daily number of visitors was less consistent this week.	Must refer to mean or average and spread or consistency. Do not allow 'range is higher'.	H25

(Section B) Activity 2:		Water savings		(Calculator Test)	

Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
2 (a)	**2**	**PS**	See below		
	1		(5.5 – 4.7) × 20 × 350 or (5.5 × 20 × 350) – (4.7 × 20 × 350) or 38500 – 32900 or 5600 OR 6000 ÷ 350 or 17.14.. AND (5.5 – 4.7) × 20 or 16		N11a
	1		No AND 5600 or No AND 17(14..) and 16	OE No supported with correct working	M15
2 (b)	**5**	**PS**	See below		
	Alternative method 1				
	1		0.5 × 600 × (700 + 800) × 1800	OE	M17a
	1		810 000 000 (mm³)	OE with consistent units Implies 1st mark	N12
	1		Their 810 000 000 × their 0.06 or 48 600	Their 0.06 must come from finding the	N5a

				difference, e.g. 0.78 – 0.72	
			000	OE other full process to find the difference in capacity	
				Accept consistent units of mm³ or cm³	
	1		48 600 000 ÷ 1 000 000 or 40 × 1000 or 40000 or 810 000 ÷ 1000	OE any correct conversion, may be implied	N11a
	1		Yes AND 48 600 and 40 000 (cm³)	OE Yes supported with correct working	M17a
	Alternative method 2				
	1		0.78 × 0.5 × 6 × (7 + 8) × 18 or 631.8	OE with consistent units	M17a
	1		0.72 × 0.5 × 6 × (7 + 8) × 18 or 583.2	OE with consistent units	N12
	1		631.8 (litres) AND 583.2 (litres)	OE with consistent units	N11a
	1		(0.78 × 0.5 × 6 × (7 + 8) × 18) – (0.72 × 0.5 × 6 × 15 × 18) or 48.6	OE accept if 0.486 seen	N5a
	1		Yes AND 48.6 (litres)	OE Yes supported with correct working	M17a
2 (c)	**3**	**PS**	31.75(%)	Award 3 marks if correct answer given	
	1		3 × 4.55 or 13.65 or 3 × 6 × 4.55 or 81.9 or 120 ÷ 4.55 or 26.37..	OE any correct conversion	M14a
	1		[120 – (3 × 6 × 4.55)] ÷ 120 × 100 or (3 × 6) ÷ (120 ÷ 4.55) × 100	OE any correct full method to find either % used or saved Award if 68.25	N5b
	1		31.75(%)	Accept 31.8 or 32	N5b
2 (d)	**2**	**UPS**	153.2 (m³)	Award 2 marks if correct answer given	
	1		118 ÷ 0.77 or 153(.24..)		N6b
	1		153.2 (m³)	CAO	N9b
2 (e)	**3**	**UPS**	358 (millions of litres per day)	Award 3 marks if correct answer given	
	1		(87 × 100) + (105 × 300) + (153 × 500) + (20 × 700) or 8700 + 31500 + 76500 + 14000 or 130700	Must use midpoints	H24
	1		358(.082..)		H24

	1		358 (millions of litres per day)	CAO	N9b

Activity 3:		Music festival (Calculator Test)			
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
3 (a)	1	UPS	4 908 630	CAO Accept commas or spaces	N1a
3 (b)	5	PS	111 (rolls)	Award 5 marks if correct answer given	
	1		4.5 × 20 000 ÷ 100 or 900 or 7 × 20 000 ÷ 100 or 1400 or 6 × 20 000 ÷ 100 or 1200 or (9.42 + 7 + 4.5 + 7) × 20 000 or 558400 ÷ 100	OE any correct conversion to metres using scale given	M18a
	1		3.14 × 6 ÷ 2 or 9.42 or 3.14 × their 1200 ÷ 2 or 1884	OE Their 1200 must come from correct method to convert dimension using scale given Accept if value from use of pi button seen	M16a
	1		Their 9.42 + 4.5 + 7 + 7 or 27.92 or their 1884 + their 900 + 2 × their 1400 or 5584 or 5585	Their 9.42 or 1884 must come from correct method to find semi circumference Accept 5585 from use of pi button Consistent units required	M16a
	1		(Their 5584 − 65) ÷ 50 or 110.38 Or 110.4	Their 5584 must come from correct method for full perimeter in actual dimensions Accept use of 5585 from use of pi button	N11a
	1		111 (rolls)	CAO	N9b
3 (c)	2	PS	No and 2400 (m^2)	Award 2 marks if correct answer given	
	1		4 × 40 × 30 ÷ 2 or 2400		M17b
	1		No and 2400 (m^2)	OE No supported with correct working	M17b
3 (d)	2	PS	See below		
	1		(4, 2) or (4, 12) or (10, 2) or (10, 12)	Brackets not required, accept comma or space. Do not accept 'and' Accept one correct coordinate marked on grid	M22b
	1		(4, 2) and (10, 2) or (4, 12) and (10, 12)	Brackets not required, accept comma or space. Do not accept 'and'	M22b
3 (e)	3	PS	See below		

			Alternative method 1		
	1		314 × 4046 or 1 270 444		M14a
	1		Their 1 270 444 ÷ 27 or 47 053.48.. OR Their 1 270 444 ÷ 50 000 or 25.4(…)	Implies 1st mark Their 1 270 444 must come from correct unit conversion	N11a
	1		No AND 47 053(.48..) (tents) OR Their 1 270 444 ÷ 50 000 or 25.4(…)	Accept No and 1 270 444 and 1 350 000 OE No supported with correct working	N11a
			Alternative method 2		
	1		50 000 × 27 or 1 350 000		N11a
	1		Their 1 350 000 ÷ 4046 or 333.66..	Implies 1st mark Their 1 350 000 must come from correct proportion calculation	M14a
	1		No AND 333(.66..) (acres)	Accept No and 1 270 444 and 1 350 000 OE No supported with correct working	N11a
3 (f)	2	UPS	0.44	Award 2 marks if correct answer given	
	1		$1 - \frac{14}{25}$ or $\frac{11}{25}$ or 0.56	OE	H27
	1		0.44	CAO	H27

Activity 4:		College admissions (Calculator Test)			
Q	Marks	UPS / PS	Process and Answer	Additional or Alternative Evidence (with guidance)	SC
4 (a)	2	PS	37	Award 2 marks if correct answer given	
	1		5 ÷ 2 × 15 or 37.5		N11a
	1		37	CAO	N9b
4 (b)	3	PS	$\frac{5}{12}$	Award 3 marks if correct answer given	

8

	1		12	CAO	H28
	1		5	CAO	H28
	1		$\frac{5}{12}$		N8

Additional guidance

Award 2 marks for:

$\frac{12}{35}$ (H28 and N8) fraction of all applicants over 26 years old

OR $\frac{13}{35}$ (H28 and N8) fraction of all applicants who scored over 40 marks

OR $\frac{5}{13}$ (H28 and N8) fraction of those who scored over 40 marks who were over 26 years old

4 (c)	2	UPS	24(%)	Award 2 marks if correct answer given	
	1		$\frac{48}{200}$ OE or 0.24		H26
	1		24(%)	CAO	H26
4 (d)	4	PS	See below		

Alternative method 1

	1		(£)720	Modal value identified	H23b
	1		1 700 000 ÷ 8 × 5 or 1 062 500	Allow full method to find $\frac{5}{8}$ of any value from the question 1 062 500 implies 1st mark	N8
	1		Their 1 062 500 ÷ their 720 or 1475.69.. or Their 1 062 500 ÷ 1476 or 719.85..	Accept 1 700 000 ÷ their 720 or 2361.11.. 1 700 000 ÷ 1475 or 1152.54.. Their 1 062 500 from correct method Their 720 must be a value clearly identified as mode and within range 390 - 980	N11a
	1		Yes AND 1475.6(9..) or Yes AND (£)719(.85..) and (£)720	OE Yes supported with correct working	M13a

Alternative method 2

	1		(£)720	Modal value identified	H23b
	1		1476 × their 720 or 1 062 720	their 720 must be a value clearly identified as mode and within range 390 - 980	N11a
	1		1 700 000 ÷ 8 × 5 or 1 062 500 or Their 1 062 720 ÷ 5 × 8 or 1 700 352	Allow full method to find $\frac{5}{8}$ of any value from the question	N8

	1		Yes AND 1 062 500 and 1 062 720 or Yes AND 1 700 352	OE Yes supported with correct working	M13a
	Alternative method 3				
	1		(£)720	Modal value identified	H23b
	1		1476 × their 720 or 1 062 720	Implies1st mark FT their 720 if a value clearly identified as mode and within range 390 - 980	N11a
	1		Their 1 062 720 ÷ 1 700 000 or 0.62512.. and 5 ÷ 8 or 0.625		N8
	1		Yes AND 0.625(12..) and 0.625 or Yes AND 62.51(2..%) and 62.5(%)	OE Yes supported with correct working	M13a
4 (e)	**2**	**PS**	See below		
	1		6 ÷ 11 or 0.5454.. or 4167 ÷ 7680 or 0.5425.. OR 6 ÷ 11 × 7680 or 4189.09.. OR 4167 × 11 ÷ 6 or 7639.5		N11a
	1		Yes AND 0.545(4..) and 0.542(5..) OR Yes AND 54.5(4..%) and 54.2(5..%) OR Yes AND 4189(.09..) OR Yes AND 7639(.5.)	OE Yes supported with correct working Award if 54.2(5…) rounded 54.3 Award if rounded to 7640	N4
4 (f)	**2**	**UPS**	(£)88.30 or (£)88.31	Award 2 marks if correct answer given	
	1		$1450 \times 1.03^2 - 1450$ or 88.305	OE any full process to find the total interest	M13b
	1		(£)88.30 or (£)88.31	CAO 2dp required	M13b