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

Mark scheme: P001604 (OS P16)
v1.7 Post refresher standardisation 15.3.2022

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.
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: L2 OS – P001604_P16				Version: 1.7	Pass mark: 38
(Section A) Activity 1: Front garden (Non-calculator Test)					
Q	**Marks**	**UPS / PS**	**Process and Answer**	**Additional or Alternative Evidence (with guidance)**	**SC**
1 (a)	**1**	**UPS**	Four point five million OR Four million five hundred thousand OR Four and a half million		N1a
1 (b)	**2**	**PS**	$\frac{1}{6}$	Award 2 marks if correct answer given	
	1		$1-\left(\frac{1}{2}+\frac{1}{3}\right)$ or $\frac{5}{6}$	OE Award if calculates 16.6…(%) or 17 (%) or $\frac{17}{100}$	N7a
	1		$\frac{1}{6}$	OE fraction only	N7a
1 (c)	**4**	**PS**	See below		
	1		0.5 × 3.14 × 2 × 2	OE	M16b
	1		6.28 (m^2)	CAO implies 1st mark	M16b
	1		4 × 3.5 – (their 0.5 × 3.14 × 2^2) or 7(.72) OR 4 x 3.5 – 5 or 9 OR 5 + 0.5 × 3.14 × 2^2 or 11.28		M16b
	1		Yes and 7(.7…) (m^2) OR Yes and 11.(28) (m^2) AND 14 (m^2)	OE Yes supported by correct working Allow 8 from correct working	M16b
1 (d)	**4**	**PS**	$1\frac{2}{3}$	Award 4 marks if correct answer given	
	Alternative method 1 Calculates cost per m^2				
	1		192 ÷ 16 or 12		N1a
	1		1.80 ÷ (0.3 x 0.3) or 20		M15
	1		$\frac{\text{their } 20}{\text{their } 12}$	OE Their values must come from correct methods	N8
	1		$1\frac{2}{3}$	Accept if $1\frac{8}{12}$ seen	N7b
	Alternative method 2 calculates cost for 16m^2				

	1		16 ÷ 0.09 or 177.77…		N1a
	1		(16 ÷ 0.09) x 1.80 or (£)320.(40)		M15
	1		Their $\frac{320.(40)}{192}$	OE Their values must come from correct methods	N8
	1		$1\frac{2}{3}$	Accept if $1\frac{8}{12}$ seen	N7b
	Alternative method 3 Calculates cost per 30cm sq tile				
	1		0.3 × 0.3 ÷ 16 or 0.005625		M15
	1		0.3 × 0.3 ÷ 16 x 192 or 1.08		N1a
	1		Their $\frac{1.8}{1.08}$ or $\frac{5}{3}$	OE Their values must from correct methods	N8
	1		$1\frac{2}{3}$	Accept if $1\frac{8}{12}$ seen	N7b
1 (e)	**1**	**UPS**	0.00045		N10b
1 (f)	**3**	**PS**	151 (bricks)	Award 3 marks if correct answer given	
	1		2 × 3.14 (× 2 ÷ 2) or 6.28	Award if 2 x 3.14 only seen	M16a
	1		2 × 3.14 (× 2 ÷ 2) × 24 or 150.72	Implies 1st mark	N11a
			151 (bricks)	Allow 152 or 168 from FT if using 6.3 or 7 from rounding of 6.28	N2b

(Section B) Activity 2: Oranges (Calculator Test)					
Q	**Marks**	**UPS / PS**	**Process and Answer**	**Additional or Alternative Evidence (with guidance)**	**SC**
2 (a)	**2**	**UPS**	17.52 or 17520000	Award 2 marks if correct answer given	
	1		0.24 × 73	OE Any full correct method	N5a
	1		17.52 or 17520000	CAO Accept 17520000	N5a
2 (b)	**3**	**UPS**	9.26 (m)	Award 3 marks if correct answer given	
	1		8.5 × 2400 + 9.5 × 5200 + 10.5 × 300 + 11.5 × 100 or 74100	OE Must use midpoints	H24

	1		Their 74100 ÷ 8000 or 9.2625 or 9.26	CAO Their 74100 is from use of midpoints	H24
	1		9.26 (m)	FT their 9.2625 rounded to 2 dp if either of 1st 2 marks not awarded. i.e. No FT if both awarded	N9b
2 (c)	**3**	**PS**	No and 44.6 or No and 12.78	Award 3 marks if correct answer given	
	1		32 + 9 ÷ 5 × 7 OR (55 - 32) × 5 ÷ 9	OE	N3
	1		44.6 or 12.77(…) or 12.8	Implies 1st mark Award if 12.8 or 13 or 45 seen Award 1st mark only for 12.7	N12
	1		No and 44.6 or 45 OR No and 12.78 or 12.8 or 13	CAO	N12
2 (d)	**2**	**PS**	See below		
	1		The most consistent variety was **Blood Orange**		H25
	1		On average **Valencia** produced the heaviest weight of fruit		H25
2 (e)	**5**	**PS**	See below		
	1		$4 \times 3.14 \times 3.8^3 \div 3$	OE	M17a
	1		229.7(3…) or 230	CAO vol of orange implies 1st mark Accept if 229.84 seen from use of pi button	M17a
	1		70	CAO median	H23a
	1		their 70 × 100 ÷ their 230	their 70 must be between 60 and 77 their 230 must come from correct substitution into formula	N5b
	1		[30.4(…), 30.5] (%),	accept 30 from correct working implies 4th mark	H23a

Activity 3: Bus driver (Calculator Test)					
Q	**Marks**	**UPS / PS**	**Process and Answer**	**Additional or Alternative Evidence (with guidance)**	**SC**
3 (a)	**2**	**PS**	Yes and 0.625 or 0.63 or 0.6 AND 0.4	Award 2 marks if correct answer given	

	1		0.625 or 0.63 or 0.6 AND 0.4	Accept 0.625 alone if stated that $\frac{20}{32}$ is the larger fraction	N4
	1		Yes and 0.625 or 0.63 or 0.6 AND 0.4 OR $\frac{61}{80}$ and $\frac{1}{10}$ and $\frac{50}{80}$	Accept Yes and 0.625 if stated that $\frac{20}{32}$ is the larger fraction OE allow direct comparison using fractions OE Yes supported by correct working	N9a
3 (b)	**4**	**PS**	No and 85(.3..) OR No and 65.1(..) and 65.6 OR No and 10.1(…) and 10.25 OR No and 5641.(6…)	Award 4 marks if correct answer given	
	1		10.25 × 6.4 OR 5600 ÷ 6.4	OE Award if 10.25 x 6.35=65.0875	M14a
	1		65.6 OR 875	implies 1st mark Award if 65.0875 seen Do not allow 66	M14a
	1		5600 ÷ their 65.6 or 85.3(…) OR 5600 ÷ 86 or 65.1(…) OR their 875 ÷ 86 or 10.1(7…) OR their 875 ÷ 10.25 or 85.3(6…) OR 86 x 85.6 or 5641.6	Ft attempt at conversion if 5600 ÷ 6.4 or 35840 OR 10.25 × 6.4 or 1.6 Their 65.6 or their 875 from correct method	N11a
	1		No and 85(.3..) OR No and 65.1(..) and 65.6 OR No and 10.1(…) and 10.25 OR No and 5641.(6…)	CAO OE No supported by correct working Do not award if incorrectly rounded Award if 86.(03..) from use of 65.0875	N9b
3 (c)	**2**	**UPS**	45(°)	Award 2 marks if correct answer given	
	1		(360 – 135 – 135) ÷ 2	OE	M22a
	1		45(°)		M22a
3 (d)	**2**	**UPS**	0.4 (cm)	Award 2 marks if correct answer given	
	1		200(00) ÷ 50 000 or 0.004	OE	M18b
	1		0.4 (cm)		M18b
3 (e)	**5**	**PS**	12 (km/h)	Award 5 marks if correct answer given	
	1		16.8 × 50 000 ÷ 100 000	OE May see 16.8 × 200 ÷ 0.4 ÷ 1000	M18a

	1		8.4	implies 1st mark	M18a
	1		42 ÷ 60 or 0.7 OR 8.4 ÷ 42 or 0.2		N11a
	1		Their 8.4 ÷ their 0.7 or 12 Or Their 8.4 ÷ 0.7(8..) or 10.7(6…) Or 0.2 x 60 or 12	FT their 8.4 from correct methods and their 0.7 from division by 60 OE	M15
	1		12 (km/h) or 10.7(6)	CAO Accept if 10.7(6..) rounded to 10.8 or 11 12 must be from correct working	M15

Activity 4: Birds (Calculator Test)					
Q	**Marks**	**UPS / PS**	**Process and Answer**	**Additional or Alternative Evidence (with guidance)**	**SC**
4 (a)	**1**	**UPS**	12		H28
4 (b)	**1**	**PS**	54 (mm)		H23b
4 (c)	**1**	**UPS**	(77, 58)	CAO Brackets not required, must have space or comma between Do not accept "and"	M19
4 (d)	**3**	**PS**	See below		
	1		[54, 54.5] (female) AND [55.1, 55.5] (male)		H28
	1		(their 55.3 – their 54.2) × 100 ÷ their 54.2 OR Their 54.2 × 0.04 AND their 55.3 – their 54.2 OR Their 55.3 ÷ their 54.2 x 100= 102.0295% or 2.(….) OR their 54.2 × 1.04 (female) OR Their 54.2 x 0.04 (female) OR	54.2 and 55.3 are the predicted values using regression Both values must be a value in the range female [53.5, 54.5] male [54.8, 55.8] Their 54.2 (female) must be a value in the range [53.5, 54.5] Their 55.3 (male) must be a value in the range [54.8, 55.8]	N5b

			their 55.3 ÷ 1.04 (male)		
	1		No and (%) value in range [1.1, 2.78] OR No and in range (56.61, 56.68) (a 4% increase of female length would give a predicted male length) add in originals OR No and in range (52.98, 53.37) (the original male length prior to a 4% increase would give a predicted female length) OR No and their 2.(1…) (mm) AND their 1.1(mm)	Their % must be from use of female length NOT male; eg 1.1 ÷ 54.2 NOT 1.1 ÷ 55.3 FT their values if both in range [54, 54.5] (female) and [55.1, 55.5] (male) and method for finding percentage increase/decrease is correct	N5b
4 (e)	**3**	**PS**	36.6 (…) or 37(%)	Award 3 marks if correct answer given	
	1		seat pitch in the range [31, 32] inches	seen or implied implied by 82	M14b
	1		$\frac{82}{224}$	CAO implies 1st mark	H27
	1		36.6 (…) or 37(%)	FT their fraction to percentage conversion	N4
4 (f)	**2**	**PS**	See below		
	1		$\frac{130}{212}$ or $\frac{65}{106}$		H27
	1		0.6(13…)	FT their fraction if between 0 and 1	H27
4 (g)	**2**	**UPS**	5400	Award 2 marks if correct answer given	
	1		90 × 60		N11b
	1		5400	do not accept 5300 from 88 × 60 rounded	N2b
4 (h)	**2**	**PS**	300 (g)	Award 2 marks if correct answer given	
	1		(3000 ÷ 1000) × 500 ÷ 5	OE	N11a
	1		300 (g)	Award 2 marks if 1500(g) seen as final answer	N11a