MATHEMATICS - NUMERACY 2nd SAMs 2017 Unit 1 (Non-calculator) Higher Tier	Mark	MARK SCHEME Comments (Page 1)
1. 150 fl oz = 150 × 25 (ml) (=3750 ml) 1 pancake 37.5 / 4 (= 9.375) ml water, or notices 3750 is 100 × 'amount given in recipe' (3750 / 9.375 OR 100 × 4 =) 400 (pancakes) Organisation and communication Accuracy of writing	 M1 M1 A1 OC1 W1 5	 OR 3750 ÷ 37.5 = 100
2. (a) 3000 × 700 with an attempt to change units 2.1 (m^2) (b) 60 × 70 × .... = 420 000 100 (cm) (c) Sight of maximum length of worktop(s) 301.5(cm) or 603 (cm) Sight of minimum length of wall 602.5(cm) Problem caused by 603(cm) worktop along wall (only) 602.5(cm) long Difference in measurement is 0.5 cm	 M1 A1 M1 A1 B1 B1 E1 B1 8	 Attempt to change units needs evidence of $\div 10^n$ where n≥3 Or equivalent method
3. Shows understanding that the pie charts don't show how many computers were sold.	E1 1	
4.(a) 45.4 cm (b) $(x - 1) \times 1.6 + 13.4 = 61.4$ OR $x = \frac{61.4 - 13.4}{1.6} + 1$ 31 (cartons)	B1 M2 A1 4	 Accept equation where x is the number of stacked cups (excluding the bottom one), provided 1 is added at the end. M1 for $1.6 \times x + 13.4 = 61.4$ (omitting +1), or $x = (61.4 - 13.4) / 1.6$, or M1 for equation that would be correct apart from missing brackets, or M1 for correct equation expressed in words. *Accept missing brackets if implied by a correct response.* If no marks allow SC1 for 31 (cartons). *Alternative method (using answer to (a)):* $(x - 21) \times 1.6 = 61.4 - 45.4 = 16$ *M1* $x - 21 = 10$ *M1* $x = 31$ *A1*

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5. (a) Measuring a distance slightly greater than the direct distance between White Castle and Skenfrith Castle	M1	
Approximate answer for 11 ÷ 'their measured distance'	M1	FT their measured distance in cm
Reasonable answer from appropriate calculation	A1	FT from M0, M1
(b) One of the appropriate perpendicular bisectors ±2° shown	M1	
X indicated, with both correct perpendicular bisectors ±2°	A1 5	
6. (a) [15 + 10 × 2 + 15 × 0.20] × 2	M1	Intention to × 2, however brackets may be missing
(£)76	A1	
(b)(i) e.g. x 2 to account for 2 people working	E1	
(ii) Sight of $10 \times h$ OR $(0).2 \times m$ OR $m / 5$	B1	Or equivalent in pence throughout
$T = 2(15 + 10\,h + 0.2m)$ or equivalent	B2	B1 for $(T =)\ 15 + 10 \times h + (0).2 \times m$ (×2), i.e. missing brackets or partially in brackets OR $(15 + 10 \times h + (0).2 \times m) \times 2$ with any 2 of the 3 terms within the brackets correct
(c) Explanation, e.g. '60×20p is more than the cost per hour', or '£12 paying for an hour charged by the minute, but £10 for the hour', '55×20p (=£11) is more than the cost per hour', or 'between 51 and 60 minutes cost more than an hour', or similar.	E2 8	E1 for an attempt to calculate the charge for 1 hour 55 minutes.
7. .(a) April Reason, e.g. greatest range, or greatest interquartile range	E1	
(b) TRUE FALSE TRUE TRUE FALSE	B2	B1 for any 4 correct.
(c) States or implies 'not possible to tell' with a reason, e.g. 'can't tell as it doesn't give any information about how much rain fell', or 'just the difference between maximum and minimum not how much rain fell', or 'don't know as the difference between UQ & LQ doesn't give the actual amount of rain, just a range for the middle 50%'.	B1 4	

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8. (a) <u>Yellow Party</u> Taxable income (55000 – 5000=) (€)50000 AND (10% tax to be paid on (€)10000 =) (€)1000	B1	
(25% tax to be paid on (€)20000=) (€)5000 AND (50% tax to be paid on (€)20000=) (€)10000	B1	FT 50% of ('their 50000' – 30000)
Yellow Party Tax to pay (€)16000	B1	CAO
<u>Orange Party</u> Taxable income (55000 – 10000=) (€)45000 AND (20% tax to be paid on (€)20000 =) (€)4000	B1	
(40% tax to be paid on (€)25000=) (€)10000	B1	FT 40% of ('their 45000' – 20000)
Orange Party Tax to pay (€)14000	B1	CAO
Orange Party (€)2000 (less to pay)	B1	FT their subtraction provided at least B2 awarded in each tax calculation.
(b) Reason, e.g. 'most of his earnings taxed at 40% rather than at 50%'	E1 8	The reason must focus on the 40% and 50% comparison. Do not accept 'pays less tax' without an explanation.
9. (a) 64 000 ÷ 10 ÷ 50 ÷ 8	M2	M1 for dividing 64 000 by two of 10, 50 or 8. *Accept alternative method involving multiplication e.g.* *50 × 10 = 500* *64 000 / 500 (= 128)* *128 / 8 (M1 for 2 of the 3 steps)*
= 16 (hours per examiner per day)	A1	CAO
Correct interpretation of the answer e.g. assumption that each examiner works for a total of 16 hours per day.	E1	
(b) Reason e.g. it is unlikely that all examiners will work for as long as 16 hours in one day OR it is unlikely that the examiners will be able to work at the same rate for 16 hours AND effect e.g. 8 days is too short a time to complete the marking.	E2 6	FT 'their 16' if appropriate. E1 for reason only.

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10. Amount of jelly per mould = 1000 / 50 = 20 (cm^3) Volume scale factor = 540 / 20 = 27 Length scale factor = 3 Height of jelly = 15 / 3 = 5 (cm)	M1 A1 M1 A1 M1 A1 6	FT 'their 20 cm^3'. FT cube root of 'their 27' provided M1 awarded. *Alternative for final 4 marks:* *M2 for $h^3=15^3 \times 20 / 540$.* *M1 for $(h/15)^3= 20 / 540$ or equivalent.* *m1 for h = $\sqrt[3]{15^3 \times \frac{20}{540}}$. A1 for 5(cm).*
11. (a) (Number of secondary school children =) 73 / (39 + 73 + 128) 73 / 240 × 40 (= 2920 / 240 or 73 / 6 or 12(.1666...) or 12 (1/6)) = 12 (b) Valid reason e.g. 'all the children are not equally likely to be selected' or 'the children selected are likely to be in a friendship group'. (c) 6.5 (male performers) OR 9.5 (female performers) Explanation that both numbers have been rounded up.	 M1 m1 A1 E1 B1 E1 6	 Intention to find proportion of 40 Must be given as a whole number. Showing understanding of the definition of a random sample.
12. Identifying a suitable right-angled triangle e.g. *AEG* $AG^2 = 5^2 + 12^2$ *AG* = 13 (m) Conclusion e.g. 'Yes, because 12·5 m < 13 m'	S1 M1 A1 B1 4	

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13. (a) Method of finding 1 correct area. 2 correct areas AND intention to add all areas. 525 (b) 1×75 + 4×25 (= 175) × 200 (£) 35 000 (c) FALSE TRUE FALSE FALSE FALSE (d) No, stated or implied with a reason, e.g. 'skew to offices greater than $80m^2$', 'the median (300^{th} value) lies within the 100-125 interval', 'No, the majority are greater than $80m^2$ (or $100m^2$)'	M1 M1 A1 M1 m1 A1 B2 E2 10	Areas are 4×25 + 6×25 + 7×25 + 2×50 = 100 + 150 + 175 + 100 CAO For an answer of 600 by considering full area, award M1, SC1 If no marks, then SC1 for 'their 175' × 200 correctly evaluated. B1 for any 4 correct E1 for an answer that implies no with a statement implying that the median is greater than $80m^2$ but without giving a reason why , OR E1 for NO with an incorrect median stated in the range 100<median<125 without further statement. *Do not accept reference to mode.*
14. (a) 0·3125 g (b) $f = 80 / 2^t$ or $f = 80 \times 0{\cdot}5^t$. (c) Valid explanation e.g. 'tends to zero' or 'becomes negligibly small'.	B1 B3 E1 5	B2 for expression $80 / 2^t$ or $80 \times 0{\cdot}5^t$ OR B1 for evidence of 80 **repeatedly** being divided by 2 or multiplied by 0·5 i.e. more than once, or sight of 2^t or $0{\cdot}5^t$.