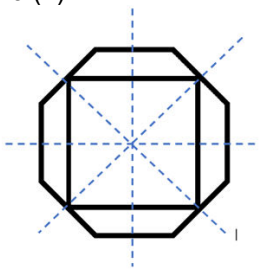
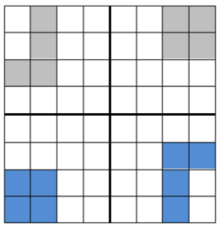
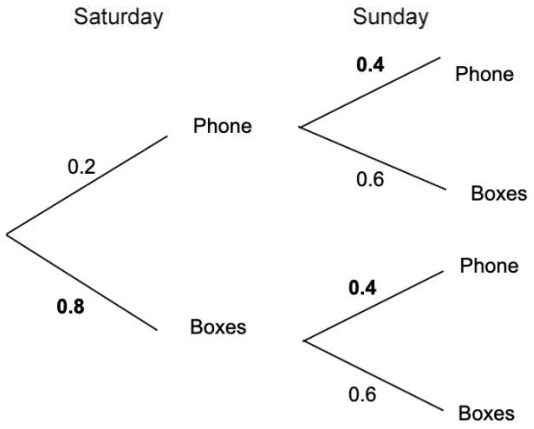
Mark Scheme

GCSE Mathematics and Numeracy Unit 2: Foundation Tier SAMS	Mark	Comments
1.(a)(i) thirty thousand one hundred (and) fifty-two	B1	
1.(a)(ii) 23 500	B1	
1.(b) 27	B1	
1.(c) –10 –7 0 11	B1	
2.(a) equilateral triangle (and) rhombus	B2	B1 for each.
2.(b) rectangle	B1	
3. Spelling selected, with sight of $\frac{14}{20}$ AND $\frac{15}{20}$ OR 70% AND 75% OR 0.7(0) AND 0.75 OR Two correct calculations for a common amount.	B2	Award B2 for Spelling selected and one of the following: • both fractions with a common denominator (could include decimals as numerators denominators). Allow fully correct pictorial representation, e.g. equal split boxes with correct shading. • both correct percentages • both correct decimals • correct work using a common amount. Award B1 for one of the following: • both fractions written with a common denominator, one of which is correct. Allow partially correct pictorial representation, e.g. equal split boxes with one shading correct, one incorrect. • one correct percentage • one correct decimal • two correct conversions but Reading selected or neither box selected. B0 for selecting Spelling with no conversions.
4.(a)(i) Exactly three 6s and any other number	B1	The other number must not be a 6.
4.(a)(ii) Any four odd numbers.	B1	
4.(b) 10	B1	
5.(a) (–2, –4)	B1	
5.(b) No indicated with suitable reason e.g. 'the y coordinate is always double the x coordinate' 'it would go through (5,10)' 'it would go through (6,12)'	E1	Accept equivalent reasons
6.(a) 169	B1	
6.(b) 9	B1	Accept ±9.
6.(c) 10	B1	
6.(d) 23	B1	
6.(e) 50	B1	

7. ($A\hat{G}D$ =) 40(°) ($A\hat{D}G$ = 180 – 2 × 40 =) 100(°) ($C\hat{D}E$ =) 360 – 90 – 90 – 100 = 80(° < 90°, therefore it's acute)	 B1 B1 M1 A1	Check diagram. FT 'their derived/stated $A\hat{D}G$' provided obtuse.
Organisation and communication Writing	OC1 W1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanations and working in a clear and logical way • write a conclusion that draws together their results and explains what their answer means For W1, candidates will be expected to: • show all their working • use correct mathematical form in their working • use appropriate terminology, units, etc.
8. (Mass of rock C =) 12.46 – 6.21 – 3.5 = 2.75 (kg)	M2 A1	May be seen in stages. Award M1 for any one of the following: • (Mass of rocks A + B =) 6.21 + 3.5 (= 9.71 kg) • (Mass of rocks A + C =) 12.46 – 3.5 (= 8.96 kg) • (Mass of rocks B + C =) 12.46 – 6.21 (= 6.25 kg) CAO
9.(a) 5x	B1	Mark final answer.
9.(b) 48y	B1	Mark final answer.
9.(c) 22	B2	Mark final answer. Award B2 for an unsupported 22 or not from incorrect working. Award B1 for one of the following: • sight of –10 (not –10t) • sight of 32 (not 32w) • 12 (with additional letters)
10.(a) 	B2	B1 for either: • 3 or 4 correct lines and no more than 1 incorrect line • 2 correct lines and no incorrect lines

10.(b) 	B2	B1 for either quadrant correct. Ignore clearly deleted shading.
11. Wales = 6 Rest of GB = 18 Rest of world = 8	B3	B2 for satisfying two of the conditions: • Rest of GB = 3 × Wales • Rest of World = Wales + 2 • Wales + Rest of GB + Rest of world = 32 B1 for satisfying one of the conditions. Answer space takes precedence. A condition must be met using non-negative integers, otherwise B0.
12.(a) 36 72 28 56 20 40 12 24 4 8	B2	B1 for at least 8 entries correct
12.(b) $\frac{11}{20}$ or equivalent.	B2	F.T. their table B1 for either: • a numerator of 11 in a fraction less than 1. • a denominator of 20 in a fraction less than 1 Penalise –1 for use of incorrect notation.
13. $13d - 5d = -31 - 9$ $8d = -40$ $d = -5$	B1 B1 B1	FT until 2nd error Mark final answer Allow an embedded answer If FT leads to a whole number answer, it must be shown as a whole number, otherwise accept a fraction
14. $\frac{21}{8} \times \frac{8}{3} - \frac{1}{8}$ $6\frac{7}{8}$	M2 A2	M1 for any one of the following: • $2\frac{5}{8} \div \frac{3}{8} = \frac{21}{8} \times \frac{8}{3}$ • $\frac{1}{2^3} = \frac{1}{8}$ A1 for any one of the following: • $\frac{21}{8} \times \frac{8}{3} = 7$ • final answer $\frac{55}{8}$ • 'their $\frac{21}{8} \times \frac{8}{3}$' $- \frac{1}{8}$ correctly evaluated and given as a mixed number
15. a = 42° b = 65° c = 115°	 B1 B1 B1	Answer spaces take precedence FT 180 °– 'their b' provided 'their b' ≠ 0°, 90° or 180°

16. Lowest common multiple of 2 × 5 × 7 × 8 or 560 seen or implied	M2	M1 for a method looking at factors or multiples, **e.g.** • sight of 2 × 7, 2 × 8 and 2 × 5 • sight of 2 × 7, 2^4 and 2 × 5 • sight of 2 × 7, 2 × 2 × 4 and 2 × 5 • (14,) 28, 42, 56 and (16,) 32, 48, 64 and (10,) 20, 30, 40 • a common multiple, not LCM, e.g. 1120
Table completed correctly, or sight of correct number of boxes in working, e.g. Knives 40 boxes Forks 35 boxes Spoons 56 boxes	A1	Answers in the table take precedence If no marks, award SC1 for an answer with whole numbers of knives, forks and spoons in correct the ratio, e.g. 80 ; 70 : 112
17. $x + x - 23 + x - 23 - 5 > 100$ or equivalent	M2	M1 for sight of any one of the following: • $x + x - 23 + x - 23 - 5$ • $x + x - 23$ (+ …….) > 100
$x > \frac{151}{3}$ or $x > 50\frac{1}{3}$ or $x > 50.3(\ldots)$	A2	Possible FT from M1 for A1 only A1 for any one of the following: • $3x - 51 > 100$ • $3x > 151$ • a simplified inequality for 'their $x + x - 23$ (+ …….) > 100'
(Youngest Rhodri could be) 51 (years-old)	B1	FT 'their $x > \frac{151}{3}$ ' provided it is not a whole number No marks for trial and improvement or an unsupported answer
18(a) Complete tree diagram  	B2	B1 for any one of the following: • 0.8 or equivalent on the boxes Saturday branch • 0.4 or equivalent on **both** the phone Sunday branches
18(b) 0.8×0.6	M1	FT $0.8 \times$ 'their lower branch 0.6' provided 0 < 'their lower branch 0.6 < 1
0.48 or equivalent	A1	Mark final answer

How to read the mark scheme

- ‘M' marks are awarded for any correct method applied to appropriate working, even though a numerical error may be involved. Once earned they cannot be lost.
- ‘m’ marks are dependant method marks. They are only given if the relevant previous ‘M’ mark has been earned.
- ‘A' marks are given for a numerically correct stage, for a correct result or for an answer lying within a specified range. They are only given if the relevant M/m mark has been earned either explicitly or by inference from the correct answer.
- 'B' marks are independent of method and are usually awarded for an accurate result or statement.
- ‘S’ marks are awarded for strategy
- ‘E’ marks are awarded for explanation
- ‘U’ marks are awarded for units
- ‘P’ marks are awarded for plotting points
- ‘C’ marks are awarded for drawing curves
- ‘OC’ marks are awarded for ‘organising and communicating’, a strand of OCW (organising, communicating and writing accurately)
- ‘W’ marks are awarded for ‘writing accurately’, a strand of OCW (organising, communicating and writing accurately)
- ‘SC’ marks are awards for special cases
- CAO: correct answer only
- ISW: ignore subsequent working
- FT: follow through

Assessment mapping

Q.	Topic	Max mark	AO1	AO2	AO3	Common Qn (HT)	Common marks (HT)	OCW
1	Writing numbers in words; rounding; factors; directed num	4	3	1				
2	2D shape properties	3	3					
3	Fractions problem	2		2				
4	Language of probability	3	2	1				
5	First quadrant coordinate problem	2	1	1				
6	Square; Square root; primes; BIDMAS; dividing by decimal	5	5					
7	Angles problem - two squares and an isosceles	6			6			*
8	Mass of rocks (decimals)	3	3					
9	Collecting like terms; multiplying; substitution	4	4					
10	Lines of symmetry; rotational symmetry	4	4					
11	Snooker players problem	3			3			
12	Listing outcomes from 2 way table; probability	4	4					
13	Solve linear equation with variable both sides	3	3			1	3	
14	Number machine with fractions and indices	4	4			2	4	
15	Parallel lines	3	3			3	3	
16	Wooden cutlery factor and LCM problem	3			3	6	3	
17	Family business age inequality	5		5		7	5	
18	Tree diagram cycle to and from work	4	4			10	4	
		65	**43**	**10**	**12**		**22**	