

5540F/2Foundation Calc				
Question	Working	Answer	Mark	Notes
1 (a) (b) (c)		4 7 Bar at 5	1 1 1	B1 cao B1 cao B1 cao. Bars may be narrow, but cannot be so narrow as to be a “bar line”.
2 (i) (ii) (iii) (iv)		5 or 7 4 6 2 or 5	4	B1 5 or 7 B1 cao B1 cao B1 2 or 5
3 (a)(i) (ii) (b)		Trapezium Parallelogram Acute	2 1	B1 Trapezium. Accept misspelling as long as the word given is still recognisable. B1 Parallelogram. Accept misspelling as long as the word given is still recognisable. B1 cao
4	$£1.70 \times 5$	8.50	1	B1 for 8.50 or £8.50p, but NOT for 8.5 or 8.05
5 (a) (b)		Diagram 20, 24	1 2	B1 cao B1 for 20 or ft from drawing in (a) B1 for 24 or ft from “20”+4
6 (a) (b)(i) (ii) (c)		09 50 15 min 09 45 80 min	1 2 2	B1 cao Accept am but not pm. B1 cao B1 for 9 45, 945am oe; or for 10.15 if 45 is given in (i) M1 for either 60 min, or for 20 min, or for any attempt at a method to “count on” to the next time A1 cao Allow 1 h 20 min, but not 1.20, 1:20 etc.

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7 (a) (b) (c)		24 15 20	1 1 2	B1 cao B1 cao B2 cao (B1 for 10 or 16 or 15)
8 (a) (b) (c)	8.6 × 5 = 43 → “£180”	£123-£127 35-36 £175-£185	1 1 3	B1 £123-£127 inclusive B1 35-36 inclusive M1 8.6×5 A1 43 A1 answers in the range £175-£185 SC: B2 for 43
9 (a) (b)		8 22	1 1	B1 cao Accept negative answers. B1 cao Accept negative answers.
10 (i) (ii) (iii)		6 12 8	3	B1 cao B1 cao B1 cao
11 (a) (b)		4 $4pq$	1 1	B1 cao Accept $\frac{12}{3}$ B1 cao
12 (a) (b)	Height × 4	1.5-2.0 6-8	1 2	B1 for height 1.5-2.0 inclusive M1 for ×4 or “height” ×4 A1 6-8 inclusive OR ft (a) × 4

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13 (a)	$30 + (7 \times 4)$	£58	2	M1 $30 + 7 \times 4$ or $30 + 28$ A1 cao
(b)	$51 - 30 = 21$ $21 \div 7 = 3$	3	3	M1 $51 - 30$ or sight of 21 M1 (dep) " 21 " $\div 7$ A1 cao NB: a correct answer which is embedded gets B2
14 (a)(i)		30	2	B1 cao
(ii)				B1 (dep) "opposite" (angles), or demonstrates angles sum to 360 ($30 + 30 + 150 + 150$); states "angles on a straight line" <i>twice</i> .
(b)(i)		Reason	1	B1 reason Eg don't sum to 360, adds to give 385 (ie not 360°)
15 (a)		9	1	B1 cao
(b)		64	1	B1 cao
(c)		$\frac{4}{5}$	2	B2 for $\frac{4}{5}$ (B1 for $\frac{80}{100}$ oe or 0.8)
(d)		£32	2	M1 for $\frac{10}{100} \times 320$, or $320 \div 10$ A1 cao NB: £320-£32=£288 or £320+£32=£352 can be awarded M1 A1, but £288 or £352 without working award B1
(e)		$0.35, \frac{3}{8}$ $\frac{2}{5}, 45\%$	2	B2 all correct, or for equivalents in order: $0.35, 0.375, 0.4, 0.45$, or for a mixture of equivalents as long as the order is correct. (B1 one error of misplacing numbers, or correct conversion to decimals or %, or correct order but reversed). NB: accept 0.38 or 0.37 instead of 0.375 for B1, but not B2

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16 (a)		Grade E	1	B1 for E, e Grade E, e, or 140°
(b)		100/360	1	B1 5/18 oe
(c)(i)	$8 \times 2 = 16$	16	3	B1 cao
(ii)	$360/40 \times 8 = 72$	72		M1 $360/40 \times 8$ oe, or $360/80 \times "16"$ oe, or $"16" \times 4.5$ or attempts to find an association eg $8 + 16 + 20 + 28$
(d)		Reason	1	A1 cao or ft from (i) B1 reason (eg %, not actual numbers; do not know how many students, etc)
17 (a)	$(2.40 \times 10) + (4.50 \times 5)$ $= 24.00 + 22.50 = 46.50$ $50.00 - 46.50$	3.50	3	M1 (2.40×10) or (4.50×5) or sight of 24 or 22.5(0) M1 $(2.40 \times 10) + (4.50 \times 5)$ or sight of $24 + 22.5(0)$ or sight of 46.5(0) A1 cao Accept 3.5
(b)	125×2	250	2	M1 125×2 A1 cao
(c)	$648 \div 2$	324	2	M1 $648 \div 2$ A1 cao
18		$\frac{5}{12}$	2	M1 for $\frac{n}{12}$ or $n \div 12$ or $n \div ("3+4+5")$ where n is an integer, where ≤ 12 . A1 $\frac{5}{12}$ or 0.41(6...) or 41.6%
19	84:16 or 42:8	21:4	2	M1 84:16 or 42:8 or 4:21 or 5.25:1 or 1:0.19..., or any multiple of 84:16 (eg 8.4:1.6, 21:4, 10.5:2), or for answers given the wrong way around. For M1 ignore % signs. A1 cao

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20	$C=2\times\pi\times 8$	50.24-50.29	2	M1 $C=2\times\pi\times 8$ or $\pi\times 16$ oe A1 50.24-50.29
21		Sketch	2	B2 complete 3-D sketch (B1 for partial 3-D sketch e.g. pyramid or base only, or a shape with a box and 2 pyramids either end) NB: If more than one shape is shown: For 2 marks there should be no choices or alternatives other than those also worth 2 marks; if there are several diagrams of which at least one is worth 1 or 2 marks, award B1. 2D diagrams get B0.
22		$3n+2$	2	B2 for $3n+2$ (oe, including un-simplified) (B1 for $3n+k$, $k\neq 2$)
23	$\frac{22.4 \times 14.5}{8.5 \times 3.2} = \frac{324.8}{27.2}$	11.94117647	2	M1 for 324.8 or 27.2 oe eg $\frac{1624}{5}, \frac{136}{5}$ A1 11.941(17647...) Accept $\frac{203}{17}, 11\frac{16}{17}$
24		Polygon	2	B2 Complete polygon (ignore histograms and any lines below a mark of 5 or above a mark of 45), but award B1 if there is a line joining the first to the last point. (B1 One vertical or horizontal plotting error OR incorrect but consistent error in placing the midpoints horizontally OR correct plotting but not joined) . Plotting tolerance :1/2 square; points to be joined by lines (ruled or hand drawn, but not curves).

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25 (a)	$45 \times 2 \div 9$	10	2	M1 for 45×2 or $45 \div "2 + 7"$ or 5 seen, or 90 seen, or 10 seen as part of a ratio (eg 10:35) A1 cao
(b)	$(80 \times 17.5/100) + 80 = 14 + 80 =$	£94	3	M2 for $80 \times \frac{117.5}{100}$ or 80×1.175 oe A1 cao or M1 for 80×0.175 or $80 \times \frac{17.5}{100}$ oe or 14 seen or 8+4+2 seen M1(dep) '14' + 80 or $80 + (80 \times 0.175)$ oe A1 cao
26 (a)	$\frac{1}{2} \times \frac{1}{4} \times (3)^2 = \frac{1}{2} \times \frac{1}{4} \times 9 = 1.125$	$2a+4c$	1	B1 cao Accept $2(a + 2c)$
(b)		1.125	2	M1 for substitution: $\frac{1}{2} \times \frac{1}{4} \times 3^2$ oe A1 1.125, $1\frac{1}{8}$, $\frac{9}{8}$ oe
(c)		$x(x-5)$	2	B2 Accept $x(x+-5)$ (B1 for x (linear expression in x) or $x-5$ seen)
(d)		2.5	3	M1 for expansion of brackets: $3x-9$ M1 for rearrangement of their two terms eg $7x-3x=-9+19$ or an indication of how this should be done for both variable and number term. A1 for 2.5 Accept $\frac{5}{2}, \frac{10}{4}$ oe

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Question	Working	Answer	Mark	Notes
27	2)252 2)126 3) 63 or factor trees 3) 21 7) 7 1	$2 \times 2 \times 3 \times 3 \times 7$	3	M1 for attempt at continual prime factorisation (at least 2 correct steps); or two stages of a factor tree with the first step completely correct and the following step at least partially correct, OR sight of at least one each of 2, 3, 7 as factors of 252. A1 Fully correct factor tree of a list of 2,2,3,3,7 which may include 1 but no other numbers. A1 $2 \times 2 \times 3 \times 3 \times 7$ or $2^2 \times 3^2 \times 7$ oe
28	$8^2 + 7^2$ $64 + 49 = 113$ $\sqrt{113} = 10.630145$	10.63-10.631	3	M1 $8^2 + 7^2$ or $64+49$ or 113. M1 $\sqrt{}(64+49)$ or $\sqrt{}113$; where it is clear that the 8 and 7 have been squared. A1 10.63 – 10.631 inclusive. SC B1 for 10.6 with no working, with or without a scale drawing.