Paper 5523_03

No		Working					Answer	Mark	Notes
1							See working	3	B3 for all correct B2 for 4 or 5 correct B1 for 2 or 3 correct

For question 1 the working table:

	SL	PL	O	T
F	21	*13*	13	47
M	*19*	5	*14*	*38*
T	40	*18*	*27*	85

No		Working	Answer	Mark	Notes
2	(a)	$2 \times -4 + 3 \times 5$	7	2	M1 for 2×-4 or -4-4 or 3×5 or 5+5+5 or -8 or 15 A1 cao
	(b)	$40 = 2m + 30$	5	2	M1 for $40 = 2m + 30$ or 40= 2x5 + 30 or 40=10+30 or $2m$=10 A1 cao
3	(a)	16 55 – 17 00 is 5min 1700 – 19 45 is 2 45 $120 + 45$	170	3	M1 for an attempt to partition, eg sight of 5 min, 2h 45 min, $\pm$ 10, 50 or 60,60,45 A1 for 60+60+50, 2h50(min) 5 and 2h45(min), 3h and -10 OR sight of 2-50, 2.50, 2 50 (not 250 or 2.5) A1 cao
	(b)(i)		80		B1 cao
	(ii)	$800 \div 8 = 100$ $3 \times 100 = 300$	300	3	M1 for $800 \div 8$ or 800 ×3 or 100 seen or 2400 seen A1 cao
	(iii)	$800 - ("80" + "300")$	420		B1 ft
	(c)	$\dfrac{320}{800} \times 100$	40	2	M1 for $\dfrac{320}{800}$ (oe) A1 cao
4		$10 \times 8 = 80$ $4 \times 2 = 8$ $80 - 3 \times 8$	56	3	M1 for 10×8 or 80 M1 for 4×2 or 8 or 8×3 or 24; nb 8 not the rectangle width A1 cao

No		Working	Answer	Mark	Notes
5	(a)	24×2	48	2	M1 for 24×2 or $24 \times 2 \times 100$ or 24×200 A1 cao SC: 480, 4800 gets B1
	(b)	$10 \div 2$	5	2	M1 for $10 \div 2$, or multiplication of a scale factor like 1:"50" A1 cao
6	(a)		87.38	1	B1 cao
	(b)		340	1	B1 cao
7		$\dfrac{10}{15} + \dfrac{3}{15}$	$\dfrac{13}{15}$ oe	2	M1 for suitable common denominator (multiple of 15), at least one of two fractions correct. A1 oe
8	(a)	$2x + 2x + 10$	$4x + 10$	2	B2 for $4x + 10$ (B1 for $2x + 2x + 10$ oe)
	(b)	$4x + 10 = 34$	6	2	M1 for '$4x + 10$'$= 34$ or $34 - 10 \div 4$ A1 cao
9	(a)		$5^2 - 3^2 = 16$ $= 4 \times 4$	1	B1 cao
	(b)	120×4 $\begin{array}{ll} 121 & 1071 \\ 2420 & 1190 \\ \underline{12100} & \underline{11900} \\ 14641 & 14161 \end{array}$ Other methods are also permissible.	480	2	M1 for 4×120 or 2×240 A1 cao 480 Or M1 $14641 - 14161$ condone one arithmetic error A1 cao 480
10			Overlay	3	B3 fully correct (B2 correct orientation in correct quadrant) (B1 any rotation about O; correct orientation in incorrect quadrant).

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11		$1200 \div 4$	300 or 5 km/h km/min	3	M1 for $1200 \div 4$ or $1200 \div 240$ A1 cao B1(indep) units as km/h; accept kmph, kph, km per hour, km/ph or units as km/min.
12	(a)	$4x = 16$	4	2	M1 for $4x = 19 - 3$ oe or 19-3÷4 A1 cao
	(b)	$4y - 2y = 8 - 1$	3.5	2	M1 for $4y - 2y = 8 - 1$ A1 cao
	(c)	$2t + 10 + 13$	$2t + 23$	2	M1 for $2t + 10$ A1 cao
13	(a)	$x^2 = \dfrac{108}{3}$	6	2	M1 $(x^2 =)\dfrac{108}{3}$ (=36) or 36 seen A1 cao 6 or -6 or both. Also accept $\sqrt{36}$
	(b)	$2 \times 54 = 2 \times 2 \times 27$	$2 \times 2 \times 3 \times 3 \times 3$	3	M1 for attempt at continual prime factorisation (at least 2 correct steps); could be shown as a factor tree. A1 all 5 correct prime factors and no others A1 $2 \times 2 \times 3 \times 3 \times 3$ or $2^2 \times 3^3$ oe
14		10.5×5	52.5g	2	M1 10.5×5 A1 cao
15	(a)		$120 < t \leq 160$	1	B1 correct interval eg 120-160
	(b)		$\dfrac{26}{60}$	2	M1 $(16 + 10) \div '60'$ or 26 seen or $\dfrac{16}{60}$ A1 oe

5

No		Working	Answer	Mark	Notes
16	(a)		5, −1, 1	2	B2 all three correct (B1 one or two correct)
	(b)			2	B1ft points plotted correctly ±1 full square at least 6 points. B1 smooth curve through their plotted points provided at least B1 awarded in (a).
	(c)		3.6, −0.6	2	B2 for x= 3.4 to 3.8 and -0.8 to -0.4 otherwise ft ±1 full square depend on at least B1 in (b) (B1 for one value or line y= 3 seen)
17	(a)		126.5g	1	B1 cao
	(b)		127.5g	1	B1 127.5 or 127.4$\dot{9}$ or 127.49…. or 127.499
18			overlay	4	M1 Quarter "circle" drawn centre A inside rectangle (ignore lines outside the rectangle) A1 radius 4 cm±2mm B1 line drawn 1 cm ±2mm from *DC*. B1 ft (dep on two loci attempts drawn) region shaded
19	(a)		No time period Labels too vague	2	B1 No time period B1 Labels too vague
	(b)	How many pizzas have you eaten in the last week? | 0 | 1 | 2 | 3 | More than 3 |	Include a time period Proper response boxes	2	B1 Include a time period B1 At least 3 numeric response boxes
20		$\dfrac{400 \times 6}{0.2} = \dfrac{2400}{0.2}$	12000-12500	3	M1 two of 400, 6, 0.2 A1 $\dfrac{2400}{0.2}$, or $\dfrac{2460}{0.2}$ or 2000×6 or 2050×6 or 400×30 or 410×30 A1

No		Working	Answer	Mark	Notes
21	(a)		4.56×10^5	1	B1 cao
	(b)		3.4×10^{-4}	1	B1 cao
	(c)		1.6×10^8	1	B1 cao
22	(a)		$(x+2)(x+4)$	2	M1 (x $\pm$ 2)(x $\pm$ 4) A1 cao
	(b)		$-2 , -4$	1	B1 ft from (a) or $-2, -4$
23	(a)	He has taken it from this year instead of last year		1	B1 Reason or appropriate calculation
	(b)	$\dfrac{240}{1.2}$	200	2	M1 $\dfrac{240}{1.2}$ oe A1 cao
24	(a)	SF = 1.5	39 cm	2	M1 SF = $\dfrac{12}{8}$, $\dfrac{8}{12}$, 1.5, 0.6 … oe A1 cao
	(b)	$45 \times \dfrac{8}{12}$	30 cm	2	M1 $45 \times \dfrac{8}{12}$, $45 \div \dfrac{12}{8}$ oe A1 cao
25	(a)		12, 33, 69, 92, 100	1	B1 cao
	(b)			2	B1 ft for 4 or 5 points plotted correctly $\pm$ 1 full 2 mm square at the end of interval dep on sensible table (condone one addition error) B1 dep for points joined by curve or line segments provided no gradient is negative . Ignore any point of graph outside range of their points. SC B1 if 4 or 5 points plotted not at end but consistent within each interval and joined .
	(c)		62- 64	1	B1 62-64 otherwise ft from cumulative freq graph

No	Working	Answer	Mark	Notes
26 (a)		$x = 3$, $y = 2$	1	B1 cao
(b)		(4,2), (5,1) (5,2), (5,3)	3	B3 all correct and none incorrect B2 at least 2 correct and not more than 4 points. B1 line $x=6$ drawn or B1 one point correct
27 (a)	90	90º	2	B1 cao B1 angle in semi circle (= 90º)
(b)	$70 \div 2$	35º	2	B1 35^0 or 325^0 B1 angle at centre = twice angle at circumference OR B1 angle on a straight line *with* isosceles triangle