

November 2003

MARK SCHEME 5504				
Number	Working	Answer	Mark	Notes
1	$200 \div 900 \times 360 =$	80° 116° 104° 60°	4	M1 for evidence of correct method (e.g. one angle correct) B2 all angles correctly drawn $\pm 2^\circ$ (B1 for 2 angles correctly drawn or all angles correctly calculated) B1 for labels (not just angles) dep on at least one sector of 4 correct.
2	$28 \div 5 \times 8$ $28 \div 0.625$ 28×1.6	44.8	2	M1 for attempt to find $\frac{8}{5}$ of 28 A1 cao
3	$575 \div 5 \times 2 = 230$ $1200 - 575 = 625$ $625 \div 5 \times 3 = 375$ $375 + 230 =$	605	3	M1 for $575 \div 5 \times 2 (= 230)$ oe M1 for “625” $\div 5 \times 3 (= 375)$ oe with “625” from subtraction A1 cao
4 (a)		$4x$	1	B1 cao accept $4 \times x$
(b)		$x + 3$	1	B1 cao accept $x \times 3$
(c)		$4(x + 3)$ or $4x + 12$	1	B1 cao $4(x + 3)$
5 (a)		10	1	B1 cao accept 8 - 12
(b)		14	1	B1 cao accept 12 - 16
6 (a)	$7x = 56$	8	2	M1 for $7x = 56$, $7x = 74 - 18$ A1 cao
(b)	$8y - 20 = 32$ or $2y - 5 = 8$ $8y = 52$ $2y = 13$	6.5	2	M1 for $8y - 20 = 32$ or $2y - 5 = 8$ or $2y - 5 = \frac{32}{4}$ A1 cao
(c)	$8p + 7 = 12$ or $5p = 5 - 3p$ $8p = 5$ $8p = 5$	$\frac{5}{8}$	3	M1 for $12 - 3p$ M1 for $8p + 7 = 12$ or $5p = 5 - 3p$ or $8p = 5$ (ft) at least letters or numbers simplified A1 cao oe
7	$\pounds 50.83 \div 17 = \pounds 2.99$ $\pounds 2.99 \times 11$	$\pounds 32.89$	2	M1 for $\pounds 50.83 \div 17$ (implied by $\pounds 2.99$) A1 cao

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8 (a)	$62 \div 2$	31°	2	M1 for $62 \div 2$ or 118° seen A1 cao
(b)	$360 \div 8 = 45$ or $6 \times 180 = 1080$ $180 - 45 = 135$ $1080 \div 8 = 135$	135°	3	M1 for $360 \div 8 (= 45)$ or $6 \times 180 (= 1080)$ M1 for $180 - 45$ or $1080 \div 8$ A1 cao
9(a) (i)		13.824	2	B1 cao
(ii)		6.3		B1 cao
(b)	$7.91 - \sqrt[3]{81} = 3.58325\dots$ $3.58325\dots \times 4.32 = 15.4796\dots$ $6.23 + 1.491 = 7.721$ $15.4796\dots \div 7.721 =$	2	3	B3 for $2 - 2.005$ or B1 for $3.58(325) (- 4.32)$ or $15.5\dots$ B1 for 7.721 seen
10 (a)		$6x + 4y$	2	B1 for either $6x$ or $4y$ B1 cao
(b)		$3pq$	1	B1 cao (not $3 \times p \times 2$)
(c)		$3(t-4)$	1	B1 cao
(d)	$6x - 3 - 4x + 6 = 2x + 3$	$2x + 3$	2	B1 for either $6x - 3$ or $- 4x + 6$ B1 cao
11	$108 \div 1.44 = \text{£}75$ $117 \div 1.6 = \text{£}73.125$ $\text{£}1.87$ is cheaper in Germany.	$\text{£}1.87$ or $\text{£}1.88$	5	M1 for $108 \div 1.44$ A1 for $\text{£}75$ M1 for $117 \div 1.6$ A1 for $\text{£}73.13$ or $\text{£}73.12$ or 73.125 B1 (dep on at least one M1) ft for correct difference
12 (a)	$\frac{17.5}{100} \times 420 = \text{£}73.50$ or 1.175×420 $\text{£}73.50 + \text{£}420 =$	$\text{£}493.50$	2	M1 for $\frac{17.5}{100} \times 420$ o.e. or 1.175×420 or $\text{£}73.50$ Or for part working: 42, 21, 10.5 A1 cao
(b)	$\frac{60}{96} \times 100$	62.5%	2	M1 for $\frac{60}{96} \times 100$ oe A1 cao
13	$\pi \times 4^2 \times 15 =$ 753.6	754 cm^3	3	M1 for $\pi \times 4^2 \times 15$ A1 cao for $753.6 - 754.1$ B1 for cm^3 (indep)

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14(a)		$x = 3$	1	B1 cao
(b)	Kite with corners at (3, -1), (4,-3), (3,-4), (2,-3)		1	B1 cao
(c)	Kite with corners at (6, 2), (8,6), (6,8), (4,6)		3	B1 for any enlargement sf other than 1 B1 for enlargement sf 2 B1 correct position
15 (a)	Negative or as urban goes up, farming goes down		1	B1 cao oe
(b)	Line within tolerance.		1	B1 for line within overlay lines, at least 10cm in length
(c)	35° farming		1	B1 ft ±½ dep on single straight line with negative gradient
16	87 ÷ 36 = 2.41666... 0.41666... × 60 = 25 or 2.41666... × 60 = 145	(0) 9 25	3	M1 for 87 ÷ 36 or 2.41(666)...or 2.42 seen M1 ft for “2.41666...” × 60 oe, or 0.41666... × 60 A1 cao SC. B1 for 2 hour 41 minutes or 2 hrs 42 mins or 942 or 941
17	$1.7^2 + 3.2^2 = 2.89 + 10.24 = 13.13$ $\sqrt{13.13}$	3.62	3	M1 for $1.7^2 + 3.2^2$ M1 (dep) for $\sqrt{1.7^2 + 3.2^2}$ A1 for 3.62 to 3.624
18 (a)		$10 < L \leq 20$	2	M1 for use of cumulative frequency to find the 21 st or 20.5 th value A1 cao for the correct range allow 10-20 etc
(b)	$(5 \times 14) + (15 \times 13) + (25 \times 8) + (35 \times 4) + (45 \times 2)$ $= 70 + 195 + 200 + 140 + 90 = 695$ $695 \div 41 =$	16.95	4	M1 $\sum fx$ using values within intervals (including ends), at least 4 consistently M1 (dep) $\sum fx$ using midpoints [5 or 5.5 etc] M1 (dep on 1 st M1) "695"÷41 A1 for 16.95 – 17 years or 17.45 – 17.5 (if midpoint 5.5 etc used)
19 (i)	$3x < 6$	$x < 2$	3	M1 for $3x < 6$ A1 cao
(ii)	Clear circle around 2, and solid line leading to left of diagram (or up to - 5 or arrow)			B1 cao
20 (a)		1.44×10^6	1	B1 cao
(b)	$(2.4 \times 10^9) \div (“1.44 \times 10^6”)$	1667	3	M1 for $2.4 \times 10^9 \div “1.44 \times 10^6”$ A1 for 1666 or 1666.6 or 1666.7 or 1666.6... A1 (dep) for 1667 cao

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21 (a)		5, -1	2	B1 for each correct answer
(b)			2	B1 ft for all 7 points plotted correctly
(c)		-1.25	1	B1 ft for smooth curve through all 7 points (dep on B1 in (a)) B1 ft $\pm\frac{1}{2}$ square (dep on a single minimum from a curve through 6 points)
22 (a)	$\tan ACB = \frac{12.8}{6.8}$ $x = \tan^{-1}(1.88)$	62	3	M1 for $\tan ACB = \frac{12.8}{6.8}$ allow $\tan \frac{12.8}{6.8}$
(b)	$BD = \frac{12.8}{\sin 42}$ $= 11.16501\dots$	19.1m	3	M1 (dep) for $x = \tan^{-1}$ ("1.88") A1 for 62° to 62.021° M1 for correct use of sin eg $\sin 42 = \frac{12.8}{BD}$ M1 for $\frac{12.8}{\sin 42}$ A1 for 19.1 to 19.13°
23 (i)	$8 \times \frac{5}{4}$	10	5	B1 for sight of $\frac{5}{4}$ or $\frac{4}{5}$ or 2 or $\frac{1}{2}$ (oe)
(ii)	$6 \times \frac{4}{5}$	4.8		M1 for 8×1.25 oe A1 cao M1 for 6×0.8 oe A1 cao
24	$4x + 6y = -6$ $6x + 9y = -9$ $9x - 6y = 84$ $6x - 4y = 56$ $13x = 78, x = 6$ $13y = -65, y = -5$ $12 + 3y = -3$ $y = -5$ $6x - 45 = -9$ $3y = -15$ $6x = 36$	$x = 6, y = -5$	4	M1 for fully correct process to eliminate either x or y (condone one error) A1 cao for non-eliminated solution M1 (dep on 1 st M1) for correct substitution of the found value A1 cao
25	$5469.78 \div 1.05 \div 1.05 \div 1.05\dots$ or $4500 \times 1.05 \times 1.05\dots\dots$	4	2	M1 for $5469.78 \div 1.05$ or 4500×1.05 or 4725 seen. A1 cao