

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

4024 MATHEMATICS (SYLLABUS D)

4024/11

Paper 1, maximum raw mark 80

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Abbreviations

- cao correct answer only
- cso correct solution only
- dep dependent
- ft follow through after error
- isw ignore subsequent working
- oe or equivalent
- SC Special Case
- www without wrong working
- soi seen or implied

Qu	Answers	Mark	Part Marks
1	(a) The correct diagram	1	
	(b) A correct diagram	1	
2	(a) - 9	1	
	(b) 103	1	
3	(a) 18.75 (accept 15 to 20)	1	
	(b) arrow between $\frac{3}{4}$ and $\frac{7}{8}$	1	
4	(a) $3x^2(4 - 5x)$	1	
	(b) $(x - 3)(x + 2)$ oe Final ans.	1	
5	(a) 4.25	1	
	(b) 2.6	1ft	ft 6.85 – their(a)
6	0.0013	2	B1 for $\frac{22}{7} = 3.14285$ or better or 3.14286
7	(a) 48	1	
	(b) 72	1	
8	$m = 9$ $n = 11$	2	B1 for either $m = 9$ or $n = 11$
9	14 30	2	B1 for 90 seen or M1 for an attempt to find a common multiple
10	$x = 5$ $y = -3$	3	C2 for one correct with working and www M1 for a correct method to eliminate one variable

11	(a)	$\frac{11}{35}$ oe isw	1	
	(b)	$\frac{20}{21}$ oe isw	2	B1 for $\frac{5}{3}$ and $\frac{7}{4}$ (or $\frac{4}{7}$) seen
12	(a)	2	1	
	(b)	8	1	
	(c)	$\sqrt{2}$	1	
13	(a)	64	1	
	(b) (i)	(0)9 50	1	
	(ii)	1.28 oe isw	1	
14	(a)	$\frac{6}{20}$ oe isw	1	
	(b)	$\frac{11}{20}$ oe isw	2	M1 for $(1 - \frac{3}{4}) \times (1 - \frac{3}{5}) + \frac{3}{4} \times \frac{3}{5}$
15	(a)	2^9	1	
	(b)	44	2	B1 for 3×2^4 or 2^2 soi or $2^{10}(2^2 \times 9 - 3)$
16	(a)	60	1	
	(b)	20.7	2	M1 for their $18 \times (1).15$ oe
17	(a)	4×10^{10}	1	
	(b)	5.6×10^8	2	C1 for 56×10^7 oe or M1 for figs 56 or their grams $\div 1000$
18	(a)	$\frac{3}{5}$ oe	1	
	(b)	$(y) \geq 2$	1	
	(c)	$\frac{7}{10}$ oe	2	M1 for $3(2t - 1) = 4(1 - t)$ soi or for both $6t - 3$ and $4 - 4t$ seen
19	(a)	Table completed correctly	1	
	(b)	n^2	1	
	(c)	$n^2 - n$ oe	1	
	(d)	780	1	

20	(a)	1 3	1	
	(b)	1 4	1	
	(c)	2	1	
	(d)	(-1, 3) oe	1	
21	(a) (i)	15	1	
	(ii)	27	2	B1 for either 35×0.6 or 5×1.2 oe seen
	(b)	54	1ft	ft their(a) $\times 3.6$ if less than 360
22	(a)	$\frac{24}{11}$ oe isw	2	M1 for $\frac{1}{b} = \frac{11}{24}$
	(b)	$\frac{bc}{c-b}$ oe	3	M1 for $\frac{1}{b} = \frac{c+d}{cd}$ or $\frac{1}{d} = \frac{1}{b} - \frac{1}{c}$ or $cd = bd + bc$ M1 for $cd - bd = bc$ or $\frac{1}{d} = \frac{c-b}{bc}$ After one of the M1 's earned, allow A1 ft for a correct conclusion from the second M stage.
23	(a)	1.5 oe	1	
	(b)	$0.7 - 1$	2	Dependent on a tangent drawn. M1 for tangent drawn at $t = 8$
	(c)	570	2	B1 for $(48 - 15) \times 15$ or $\frac{1}{2} \times 15 \times (58 - 48)$ or $\frac{1}{2}(48 - 15) \times 15$ or $\frac{1}{2}(58 - 15) \times 15$
24	(a)	Similar triangles justified	2	B1 for $BAX = AYD$ or $DAY = AXB$ (Alternate) or for $ABX = ADY$ (opposite in parallelogram)
	(b)	10.5 oe	2	B1 for $\frac{12}{8}$ or $\frac{8}{12}$ soi
	(c)	3	2	M1 for $\frac{CX}{9} = \frac{4}{12}$ or $\frac{CX}{9-CX} = \frac{4}{8}$ oe or B1 for $BX = \frac{9 \times 8}{12}$
25	(a) (i)	25	1	
	(ii)	10	1	
	(iii)	$\frac{2}{3} - \frac{1}{2}$	2	M1 for $6x^2 - x + 3 = 5$ or better seen
	(b)	$6a^2 + 11a + 8$	2	M1 for $6(a+1)^2 - (a+1) + 3$ seen