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Mark Scheme (Results)
Summer 2009

IGCSE

IGCSE Mathematics (4400) Paper 2F

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A PEARSON COMPANY

Summer 2009 IGCSE Mathematics Mark Scheme – Paper 2F

Q	Working	Answer	Mark	Notes	
1 ai		998 1908 1990 1998 2001	1	B1	
ii		2001	1	B1	
iii		1908	1	B1	
iv		1998 – 998	1	B1	B0 for 998-1998
bi		3478	1	B1	
ii		8734	2	B2	B1 for 8374
					Total 7 marks

2 ai		kite	1	B1	Allow mis-spellings (any *recognisable* attempt)
ii		parallelogram	1	B1	Allow mis-spellings (any *recognisable* attempt)
iii		trapezium	1	B1	Allow mis-spellings (any *recognisable* attempt)
bi		acute	1	B1	Allow mis-spellings (any *recognisable* attempt)
ii		reflex	1	B1	Allow mis-spellings (any *recognisable* attempt)
					Total 5 marks

3 i		A at 0.5 $\pm$ 2mm	1	B1	If no Xs, mark point on line level with middle of letter A,
ii		B at 1 $\pm$ 2mm	1	B1	B or C
iii		C > 0 & < 0.25	1	B1	If no letters then no marks
					Total 3 marks

4 a	5 x 4 + 12			M1	
		32	2	A1	cao
b	(47-12) ÷ 5			M1	M1 for 47-12 or 35 or 47÷5 or 9.4 or 5"n"+12=47
		7	2	A1	cao
					Total 4 marks

5	a		1, 3, 11, 33	2	B2	B2 fully correct (no additions or errors) B1 for any two correct factors 3 correct & 1 wrong = B1
	b		46	1	B1	No embedded answers i.e. $46^2=2116$
	c		243	1	B1	
	d		26	1	B1	No embedded answers i.e. $26^3=17576$
						Total 5 marks

6	7 x 1.20 + 6 x 0.75 (= 12.9) 20 – "12.9"	7.1(0)	3	M1 M1 A1	condone omission of final zeros dep
					Total 3 marks

7	a		6	1	B1	
	b	Attempt to add all the numbers "88" ÷ 8	11	3	M1 M1 A1	dep If ans = 76.6(25) M2 A0
	c		11	1	B1	ft (b)
						Total 5 marks

8	a	3 + 5 + 3 + 5 oe	16	2	M1 A1	
	b	46.8 ÷ 7.2	6.5	2	M1 A1	
						Total 4 marks

9	ai		$^{9}/_{36}$	1	B1	
	ii		$^{4}/_{20}$	1	B1	
	b	$^{2}/_{3} \times {}^{9}/_{5}$ $^{x}/_{9}$ and $^{y}/_{9}$ $^{6}/_{9} \div {}^{5}/_{9}$	$^{18}/_{15}$ or $^{6}/_{5}$	3	M2 M2 A1	M1 for inverting 2nd fraction i.e. $^{9}/_{5}$ oe or M1 for 2 correct fractions with a common denominator of a multiple of 9 M1 correct numerators and intention to divide Any fraction equivalent to 1 1/5 Do not allow decimal conversions
						Total 5 marks

10	a		12 cm^2 sq cms	3	B2 B1	B1 for 11 to 13 or 3 × 4 ind
	b		Correct $\pm$ 2 mm	2	B2	B1 for any 2 vertices correct $\pm$ 2 mm or correct size, shape & orientation
						Total 5 marks

11	a	(10 + 5) x 4	60	2	M1 A1	brackets necessary unless answer correct
	b	28 ÷ 4 – 5	2	2	M1 A1	allow 23 ÷ 4 or 5.75 (i.e. reverse operations but wrong order)
	c	-8 ÷ 4 – 5 or -2 - 5	-7	2	M1 A1	allow -13 ÷ 4 or -3.25 (i.e. reverse operations but wrong order)
	d		(x + 5) × 4 or 4x + 20 oe	2	B2	B1 for x+5×4 or x+20 or 4 x +5 or "y=" 4x+5 B0 for x=4x+5
						Total 8 marks

12	a	250 x 1.85	462.5(0)	2	M1 A1	462 or 463 = M1 A0
	b	320 ÷ 1.85	172(.97…)	2	M1 A1	awrt 173
	c	1 ÷ 1.85 oe	0.54	2	M1 A1	e.g "172.97" ÷ 320 or 250 ÷ "462.5" awrt 0.54
						Total 6 marks

13	a	90 ÷ 40(=2.25) or 12 ÷ 40(=0.3) or 40 ÷ 12(=3 1/3) then "2.25" x 12 or "0.3" x 90 or 90 ÷ "3 1/3" (scale factors) (students per degree) (degrees per student)	27	3	M1 M1 A1	or M2 for 12 x 90 ÷ 40 M1 for 9 x 12 (=108) then M1(dep) for "108" / 4 dep cao
	b	$^{130}/_{240}$ x 360	195°	2	M1 A1	M1 for $^{130}/_{240}$ cao
						Total 5 marks

14	a		x - 5	1	B1	Accept y=x-5 not x=x-5 or 0=x-5
	bi	3(x – 5) = 39 or 3x-15=39 or x-5=13			M2	M1 for 3x – 5 = 39
	ii	3x = 54 or x - 5 =13	18	4	M1 A1ft	Allow full ft on ax +b =c from bi ans a>1 b,c ≠ 0 18 no wrong working = M1 A1
						Total 5 marks

15	6 × (-9 + 1) = -48 oe (-54+6)	-3	3	M1 M1 A1	allow without brackets M1 for -8 numerator correct (or $6/(-2)$ or $(3/8)$ x -8) cao
					Total 3 marks

16	67 ÷ 2 or (67 +1) ÷ 2 oe			M1	attempt to find middle of frequencies of people
		7	2	A1	cao look for mean (7.56..) rounded down M0 A0
					Total 2 marks

17	a	2 x π x 40 oe	251	2	M1 A1	 awrt 251
	b	8 x 10 or 80 π x 3^2 (value rounding to 28.3 or 28.2) "8x10" – "π x 3^2"	51.7	4	M1 M1 M1 A1	Rectangle area Circle area dep on both M1's awrt 51.7
						Total 6 marks

18	a	1 – (0.3 + 0.1 + 0.4)	0.2oe	2	M1 A1	Look for answer in table Decimals, fractions, % only
	b	0.3 + 0.4	0.7oe	2	M1 A1	 Decimals, fractions, % only
						Total 4 marks

19	a	$5.1^2 + 3.2^2$ (= 36.25) √"36.25"	6.02	3	M1 M1 A1	M2 for $5.1/\cos(\tan^{-1}(3.2/5.1))$ or $3.2/\sin(\tan^{-1}(3.2/5.1))$ awrt 6.02
	b	tan selected (*AB* =) 6.5 x tan 32°	4.06	3	M1 M1 A1	$\sin 32° = {}^{AB}/_{6.5/\cos 32}$ (*AB* =) $\sin 32° \times {}^{6.5}/_{\cos 32}$ awrt 4.06
						Total 6 marks

20	12-x=21 or 12-21=x or –x=21-12 [12 - 21 = x] or [-x = 21 – 12] oe	-9	3	M2 A1	[$-{}^{x}/_{3} = 7 - {}^{12}/_{3}$] or [$^{12}/_{3} - 7 = {}^{x}/_{3}$] M1 for 12-x=3x7
					Total 3 marks

21	A product of 3 or more factors of which 2 are from 2,2,3,11	1,2,2,3,11or 2,2,3,11 2 x 2 x 3 x 11	3	M1 M2 A1	Product can be implied from a factor tree or repeated division These combinations can be implied from a factor tree or repeated division cao
					Total 3 marks

22	$[{}^{80}/_{40}]$ or $[{}^{84}/_{42}]$ √36 or 6	12	3	B1 B1 B1	 Dep on both previous b1's (Accept 10 if $^{80}/_{40}$, 6 used)
					Total 3 marks