Practice Tests Set 17 – Paper 2F-3F mark scheme, performance data and suggested grade boundaries

Qn	Working	Answer	Mark	Notes
1	E.g. 42 ÷ 3 (= 14) or 68 ÷ 8 (= 8.5) or 42 × 3 (= 126) or $\frac{15}{8}\times 68$ (= 127.5)			M1 for a correct first step
	E.g. 9 × '14' + 15 × '8.5' oe or '126' + '127.5'			M1 for a complete method
		253.5	3	A1
				Total 3 marks
2	$\frac{1}{2} = \frac{30}{60} = 0.5$ or 50% $\frac{3}{4} = \frac{45}{60} = 0.75$ or 75% $\frac{4}{5} = \frac{48}{60} = 0.8$ or 80% $\frac{5}{6} = \frac{50}{60} = 0.83...$ or 83...%	$\frac{1}{2}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$	2	B2 can be given as fraction, decimal or percentage equivalents B1 for 3 fractions in the correct order **or** for 4 in fractions in the correct reverse order **or** for 2 fractions correctly converted to decimals or percentages **or** 2 fractions written with a common denominator that is a multiple of 60

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Qn	Working	Answer		Mark	Notes
3	250 ÷ (2 + 3) (= 50)			M1	
	50 × 2 (= 100) **or** 50 × 3 (= 150)			M1	
	$\frac{42}{100}\times$'150' (= 63) or 0.42 × '150' oe (= 63)			M1	(indep) for a method to find 42% of **their** amount for Haydn
	'100' – '63'			M1	(dep on M2) for finding difference between their amounts for Rose and Haydn
		37	5	A1	
					Total 5 marks

4	(a)		Pacific	1	B1	Accept 1.357×10^5
	(b)	$1.119 \times 10^5 - 1.797 \times 10^4$		2	M1	Accept 111 900 – 17 970 oe or 93 930 or −93 930
			$9.393(0) \times 10^4$		A1	Accept (±) $9.393(0) \times 10^4$ or (±) 9.39×10^4 or (±) 9.4×10^4
						Total 3 marks
5		(180 – 44) ÷ 2 (= 68)			M1	May be seen on diagram
		180 – '68' **or** 44 + '68'			M1	
			112	3	A1	
						Total 3 marks

Qn		Working	Answer	Mark	Notes
6	a		3	1	B1
	b	$\frac{12}{60}\times 360$ or $360 \div 60 \times 12$ or $360 \div (60 \div 12)$ oe or $\left(\frac{12}{60}\times 100\right)\frac{20}{100}\times 360$			M1 M1 Allow two stages e.g. $\left(\frac{12}{60}\times 100\right)\frac{20}{100}\times 360$
			72	2	A1
	c	$\frac{35}{100}\times 60$ or 0.35×60 oe			M1
			21	2	A1
					Total 5 marks

7	$8 + 3 \times 4.50$ (= 21.5)			M1
	(30 – '21.5') ÷ 1.1 (= 7.72... or 7) or $8.5 \div 1.1$ (= 7.72... or 7)			M1 method to find the number of packets of seeds – could be repeated addition
	30 – '21.5' – '7' × 1.1 or 8.5 – 7.7			M1 complete method to find the change
		0.8(0)	4	A1
				Total 4 marks

8	(a)	$(60 \div 24) \times 100$ or $\frac{100}{24}\times 60$		2	M1 Complete method accept 4.16×60
			250		A1 cao

Qn	Working	Answer	Mark	Notes
(b)	$\frac{30-24}{24}(\times 100)$ oe or $30 \div 24$ (=1.25) or $\frac{125}{100}$ or $\frac{30}{24}(=1.25)$ or $\frac{"250"}{2}-100$		2	M1 ft *their* 250 from (a)
		25		A1 cao
				Total 4 marks

9	3.4 or $\frac{17}{5}$ or $3\frac{2}{5}$ or $3\frac{24}{60}$ or 204 oe		3	B1
	$433.5 \div 3.4$ or $433.5 \div \frac{17}{5}$ or $433.5 \div 3\frac{2}{5}$ or $\frac{433.5}{'204'} \times 60$ oe			M1 for use of speed = distance ÷ time Allow $433.5 \div 3.24$ (= 133.796…) for this mark only
		127.5		A1 oe allow 128
				Total 3 marks

10	$14 \div 5 \times 9$			M1
		25.2	2	A1 oe
				Total 4 marks

11 (a)		D	1	B1

Qn	Working	Answer	Mark	Notes
(b)		4 hours 52 minutes	2	B1 B1
(c)	time = 40 + 45 (= 85 minutes oe) or 1 hr 25 min		3	M1 accept 60 + 25 May be implied by 70 ÷ 40
	(“85” – 15) ÷ 40			M1 dep 1st M1
		1.75		A1 oe eg 1.750 or $\frac{7}{4}$
(d)		$T = 40k + 15$	2	B2 B1 for $40k$ +15 or $T = 40k + a$ ($a \neq 15$) Accept $40 \times k$ etc
				Total 8 marks

12	(Berlin) 120 ÷ 1.16 (= 103.45)		4	M1
	(Dubai) 600 × 0.24 ÷ 1.16 (= 124.14) oe or 144 ÷ 1.16			M1
	“124.14” – “103.45”			M1 dep on M2 Accept “103.45” – “124.14” or rounded/truncated values
		20.69		A1 allow 20.68 to 20.7(0)
				Total 4 marks

Qn	Working	Answer	Mark	Notes
13	0.024 × 50 000 (= 1200) oe or 1.024 × 50 000 (= 51 200) oe or 1.024^2 × 50 000 (= 52 428.8) oe or 0.024 × 50 000 × 3 (= 3600) oe 0.024 × 50 000 × 3 + 50 000 (= 53 600) oe		3	M1 M2 for $50\,000 \times 1.024^3$
	0.024 × (50 000 + '1200') (= 1228.8) oe **and** 0.024 × (50 000 + '1200' + '1228.8') (= 1258.2912) **or** '1200' + '1228.8' + '1258.2912' (= 3687.(0912)) **or** 1.024 × '52 428.8'			M1 for completing method to find total amount in the account
		53 687		A1 accept 53 687 – 53 688
				accept (1 + 0.024) or $\left(1+\frac{2.4}{100}\right)$ as equivalent to 1.024 throughout
				Total 3 marks

Qn	Working	Answer	Mark	Notes
14 a	(x =) 270 ÷ (12 × 5) (= 4.5) oe		3	M1
	π × '4.5'^{2} × 2 × '4.5' (= 182.25π oe)			M1 ft dep on M1
		573		A1 accept 572 − 573
b		1 000 000	1	B1 or (1 ×) 10^6 or (one or 1) million oe
				Total 4 marks

Qn	Working	Answer	Mark	Notes
15 a		Correct number line	2	B2 for a fully correct number line e.g. shaded circle at −2, unshaded circle at 1 and a line drawn between them B1 for a shaded circle at −2 **or** an unshaded circle at 1 **or** circles at −2 and 1 with line in between but shading incorrect
b		−3, −2, −1, 0, 1, 2	2	B2 fully correct values with no extras B1 for 5 correct values and none incorrect **or** all 6 correct values with no more than one additional incorrect value
				Total 4 marks

Qn	Working	Answer	Mark	Notes
16	(5 – 2) × 180 ÷ 5 (= 108) **or** 360 ÷ 5 (= 72)		5	M1 for method to find an interior or exterior angle of a pentagon
	(6 – 2) × 180 ÷ 6 (= 120) **or** 360 ÷ 6 (= 60)			M1 for method to find an interior or exterior angle of a hexagon
	360 – 108 – 120 (= 132) **or** 60 + 72 (= 132) **or** (180 – '120') + (180 – '108')			M1 dep on M2 for a correct method to find angle *EDI* using correct figures
	360 – '72' – '60' – '132' (= 96)			M1 for a complete method to find angle *x*
		96		A1 dep on correct working
				Note: Angles may be seen on diagram throughout
				Total 5 marks

17	$x \times 1.05 = 1.26$ oe eg $(x =)$ 1.26 ÷ 1.05 (= 1.2)	or 30 × 1.26 (= 37.80)	or 30 ÷ 1.05 (= 28.57)		3	M1
	30 ×"1.2"	"37.80" ÷ 1.05	"28.57…" × 1.26			M1

Qn	Working	Answer	Mark	Notes
		36		A1 cao If no marks awarded, SC B1 for one operation used correctly, even with another incorrect operation. eg $1.26\times0.95\times30$ oe or $1.26\times1.05\times30$ oe or $1.26\div0.95\times30$ oe
				Total 3 marks

18	$0.5\times\pi\times6^2$ (= 56.54…) **or** 12×6 (= 72) **or** $\pi\times6^2$ oe		3	M1
	"72" – "56.54…"			M1 dep M1 for a complete method
		15.5		A1 15.4 to 15.5
				Total 3 marks

19	(11 × 3) + (8 × 5) + (6 × 7) + (5 × 9) (= 160) (= 33 + 40 + 42 + 45 = 160)		4	M1 Correct numerical products using midpoints (allowing one error) with intention to add. May be seen in table.
	"160" + x = 4. 25 × (11 + 8 + 6 + 5 + x) oe or $\frac{"160"+x}{"30"+x}=4.25$ or "160" + x = 4.25 × "30" + 4.25x			M1 dep M1 for correct equation ft *their* 160.
	"160" – "127.5" = 4.25x – x or 32.5 = 3.25x			M1 Isolating x and number terms

Qn	Working	Answer	Mark	Notes
		10		A1 dep 1st M1
				Total 4 marks

20	(a)		107	1	B1 Accept 105 → 109
	(b)	360 – 135 or 180 + 45		2	M1
			225		A1
					Total 3 marks

Qn	Working	Answer	Mark	Notes
21	$7^2-(10\div 2)^2\ (=24)$ or $\dfrac{\sin\left(\frac{1}{2}x\right)}{5}=\dfrac{\sin 90}{7}$ oe or $\cos x=\dfrac{7^2+7^2-10^2}{2\times 7\times 7}$ oe or $\sin\left(\frac{1}{2}x\right)=\dfrac{5}{7}$ oe or $\cos y=\dfrac{5}{7}$ oe		5	M1 or use of sine rule or cosine rule to find angle (x) of the apex or angle y $\left(=90-\frac{1}{2}x\right)$
	$\sqrt{7^2-(10\div 2)^2}\ (=\sqrt{24}=2\sqrt{6}=4.898...)$ or $(x=)2\times\sin^{-1}\left(\dfrac{5\times\sin 90}{7}\right)(=91.169\ldots)$ oe or $(x=)2\times\sin^{-1}\left(\dfrac{5}{7}\right)(=91.169\ldots)$ oe or $(x=)\cos^{-1}\left(\dfrac{7^2+7^2-10^2}{2\times 7\times 7}\right)(=91.169\ldots)$ oe or $(x=)2\left(90-\cos^{-1}\left(\frac{5}{7}\right)\right)\left(=2(90-44.415)...=91.169...\right)$ Allow 5 from correct working			M1 for complete method to find height of triangle or the angle (x) of the apex $\cos^{-1}\left(\frac{5}{7}\right)(=44.415...)$ **and** $5\times\tan'44.415...'(=4.898...)$ or $7\times\sin'44.415...'(=4.898...)$ **or** $\sin^{-1}\left(\frac{5}{7}\right)(=45.584...)$ **and** $\dfrac{5}{\tan'45.584...'}(=4.898...)$ or $7\times\cos'45.584...'(=4.898...)$
	E.g. $6\times 10+\dfrac{(10\div 2)\times'\sqrt{24}'}{2}\times 2\ (=60+10\sqrt{6}=84.494...)$ **or** $5\times\left(6+6+'\sqrt{24}'\right)(=60+10\sqrt{6}=84.494...)$ **or** $\left(\frac{1}{2}\times 7\times 7\times\sin'91.169...'+10\times 6\right)(=60+10\sqrt{6}=84.494...)$			M1 for method to find the total area of the pentagon allow answers in the range 84.49 – 85

Qn	Working	Answer	Mark	Notes
	E.g. '84.494' ÷ 16 (= 5.28...) or $\left(60+10\sqrt{6}\right)\div 16$ (= 5.28...)			M1 for method to find the number of tins required using their area
		6		A1 dep on at least M2
				Total 5 marks

Practice Tests Set 17 – Paper 2F-3F mark scheme, performance data and suggested grade boundaries

Qn	Working	Answer	Mark	Notes

			Edexcel averages: scores of candidates who achieved grade:						
Qn	Max score	Mean %	ALL	5	4	3	2	1	U
1	3	85	2.56	2.79	2.74	2.41	1.91	1.25	0.50
2	2	88	1.75	1.89	1.79	1.66	1.32	1.33	0.50
3	5	69	3.47	4.71	3.69	1.72	0.14	0.08	0.00
4	3	73	2.19	2.50	2.19	1.87	1.31	1.42	0.00
5	3	73	2.19	2.82	2.13	1.69	0.41	0.17	0.00
6	5	67	3.35	4.04	3.41	2.46	2.04	0.67	0.00
7	4	72	2.86	3.51	2.67	1.94	1.68	1.08	0.50
8	4	65	2.59	3.26	2.47	1.97	0.91	0.33	0.00
9	3	64	1.93	2.52	1.82	1.16	0.59	0.33	0.50
10	2	58	1.16	1.56	1.21	0.69	0.09	0.00	0.00
11	8	60	4.77	6.26	4.26	3.14	1.43	0.83	0.00
12	4	56	2.24	2.97	1.97	1.35	0.78	0.17	0.00
13	3	51	1.52	2.09	1.31	0.91	0.23	0.08	0.00
14	4	47	1.89	2.77	1.52	0.56	0.18	0.08	0.00
15	4	42	1.69	2.37	1.15	0.82	0.78	0.00	0.00
16	5	48	2.40	3.61	1.41	1.12	0.05	0.00	0.00
17	3	40	1.20	1.59	0.84	0.71	0.48	0.67	0.00
18	3	47	1.42	2.24	0.63	0.42	0.09	0.00	0.00
19	4	35	1.39	2.17	0.79	0.10	0.26	0.08	0.00
20	3	22	0.67	1.00	0.37	0.23	0.17	0.17	0.00
21	5	23	1.14	1.92	0.38	0.00	0.00	0.00	0.00
	80	**55**	**44.38**	**58.59**	**38.75**	**26.93**	**14.85**	**8.74**	**2.00**

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Qn	Working	Answer	Mark	Notes

Suggested grade boundaries

Grade	5	4	3	2	1
Mark	48	33	21	12	6