

Predicted paper 2019 – Paper 2F mark scheme – Spring 2019

8			No with reason	3	M1 for 17, 20 .or + 3 or $3n + 2$ M1 for method to show that 34 is not in the sequence eg continue sequence to at least 32 eg attempt to solve $3n + 2 = 34$ C1 (dep on M2) for statement with conclusion eg No with 32, 35 shown eg $n = 32 \div 3$ which is not a whole number
2			145	2	M1 for $319 \div 2.2$ A1 cao
3.			$15ab$	1	B1 cao
4.			142	2	M1 for $720 - (110 + 92 + 158 + 85 + 133)$ or $720 - 578$ A1 for 142 cao
5			$\frac{1}{7}$	1	B1 cao
6.			96	4	M1 for a method to find 36% of 400 (= 144) M1 for a method to find $\frac{2}{5}$ of 400 (= 160) M1 (dep on M2) for $400 - "144" - "160"$ A1 cao

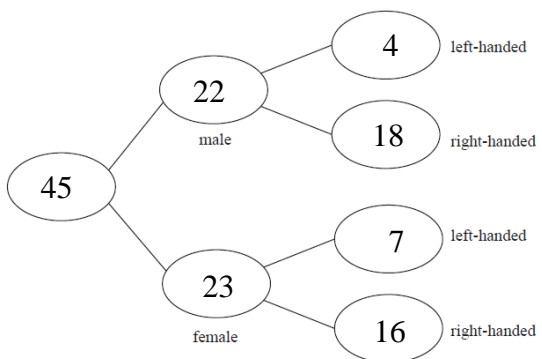
7.			e.g. 10, 12, 5, 2	3	M1 for at least 2 factors of 60 clearly identified M1 for $20 < \text{sum of '4 distinct natural numbers'} < 35$ A1 cao
8.			57°	4	M1 for a method to find angle BCD, e.g. $180 - 75 (= 105)$ M1 for a complete method to find x A1 for $x = 57$ with supporting working C1 (dep on M1) for “sum of the angles in a quadrilateral is 360° ” or equivalent quadrilateral theory. [Condone omission of other reasons]
9.	(a)			2	B2 conversion graph (line) drawn between 4.4 pounds and 15.4 pounds (B1 for plotting at least 2 points from the table)
	(b)		4.4 – 4.6	1	B1 for 4.4 – 4.6 or ft graph (dep on single straight line)
	(c)		14.2 – 14.4	1	B1 for 14.2 – 14.4 or ft graph (dep on single straight line)

14.		9.39×10 $24.30 \times 3 + 9.39$ $93.90 - 82.29$	£11.61	5	<p>M1 for a correct method to find the most expensive way to buy the 10 cartridges (= 93.90)</p> <p>M1 for a correct method to find the least expensive way to buy the 10 cartridges (= 82.29)</p> <p>M1 (dep on M1 scored) for a correct method to find the difference between their least and their most expensive way, provided that both totals are for the cost of exactly 10 cartridges</p> <p>A1 for 11.61</p> <p>B1 (indep) for correct units</p>
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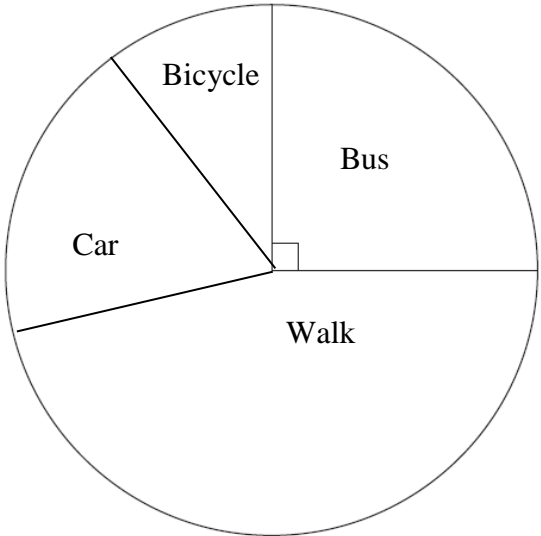
15	(a)	$4.3333(3\dots) + 0.37894(7\dots)$ or $\frac{13}{3} + \frac{36}{95}$		2	M1	Evaluate either fraction correctly as a decimal to at least 5SF(rounded or truncated) or as a simplified fraction or an answer of 4.71(2)
			4.7122(80702)		A1	Correct to at least 5SF (rounded or truncated).
	(b)		4.71	1	B1	ft if at least 4SF given in (a) (not 4.71)

16	a		$0 < p \leq 1$	1	B1	
	b	$0.5 \times 19 + 1.5 \times 12 + 2.5 \times 5 + 3.5 \times 2 + 4.5 \times 2 (=56)$ or $9.5 + 18 + 12.5 + 7 + 9 (=56)$	1.4	4	M2	for at least 4 correct products added (need not be evaluated) If not M2 then award M1 for consistent use of value within interval (including end points) for at least 4 products which must be added OR correct mid-points used for at least 4 products and not added
		“56” ÷ 40			M1	dep on at least M1 Allow division by their $\sum f$ provided addition or total under column seen
					A1	for 1.4 or $1\frac{2}{5}$
17	(a)	$25 - 4 \times -3$ or $25 - -12$ or $25 + 12$		2	M1	Correct substitution
			37		A1	
	(b)	$2x^2 + x$		3	M1	
		(+) $3x - 6$			M1	indep
			$2x^2 + 4x + 1$		A1	Cao
18		$\frac{3450}{2+6+7} (=230)$ or $\frac{2}{2+6+7} \times 3450 (=460)$ or $\frac{7}{2+6+7} \times 3450 (=1610)$ or $\frac{7-2}{2+6+7} \left(=\frac{1}{3} \right)$		3	M1	
		$(7-2) \times \text{“230”}$ or $7 \times \text{“230”}$ or $2 \times \text{“230”}$ or $\text{“1610”} - \text{“460”}$ or $\frac{1}{3} \times 3450$			M1	dep
			1150		A1	
19		$\frac{8}{100} \times 20000 (=1600)$		4	M1	

		$20000 + \frac{8}{100} \times 20000$ $(=21600)$ or $(20\,000 - 19200) +$ $\frac{8}{100} \times 20000 (=2400)$			M1	Award M2 for 20000×1.08 or 21600
		$\frac{21600 - 19200}{19200} (\times 100)$ or $\frac{2400}{19200} (\times 100)$ or $21600 \div 19200$ $(\times 100)$ oe			M1	or for 1.125 or $\frac{9}{8}$ or 112.5%
			12.5		A1	oe

Part	Working or answer an examiner might expect to see	Mark	Notes
20		C1	This mark is given for correctly placing at least one piece of the data given in the question (22 or 16)
		C1	This mark is given for finding at least one unknown piece of data (4, 18, 7 or 23)
		C1	This mark is given for a completely correct probability tree

Part	Working or answer an examiner might expect to see	Mark	Notes
21	$0.5 \times \pi \times 50 = 78.55$	P1	This mark is given for a process to find the circumference of the semicircle
	$78.55 + 50 = 128.55$	P1	This mark is given for a complete process to find the perimeter of the field
	$128.55 \times 29.86 = 3838.50$	P1	This mark is given for finding the cost of the fencing
	$3838.50 + (180 \times 3)$	P1	This mark is given for a complete method to find the total cost of the job
	4378.50	A1	This mark is given for the correct answer only

Part	Working or answer an examiner might expect to see	Mark	Notes
22	$\frac{27}{60} \times 360 = 162^\circ,$ $\frac{12}{60} \times 360 = 72^\circ,$ $\frac{6}{60} \times 360 = 36^\circ$	B1	This mark is given for finding the angle for at least one sector
		B1	This mark is given for drawing at least one sector accurately
		B1	This mark is given for an accurately drawn pie chart
		B1	This mark is given for all sectors accurately labelled

23	Eg $\frac{1.5}{100} \times 20\,000$ oe or 300	OR	3	M1 for eg $\frac{1.5}{100} \times 20\,000$ oe or 300	OR M2 for $20\,000 \times 1.015^3$ or $20\,000 \times 1.015^4$ or 21 227.27..
	$\frac{1.5}{100} \times (20\,000 + '300') = 304.5$ $\frac{1.5}{100} \times (20\,000 + '300' + '304.5')$ = 20913.5675			M1 for completing method	(M1 for $20\,000 \times 1.015^2$ or 20 604.5)
				Accept $1 + 0.015$ as equivalent to 1.015 throughout	
				SC: If no other marks gained, award M1 for $20\,000 \times 1.045$ oe or 20900 or 900	
			A1 Answers in range 20 913– 20 914		20 914
24	Interior angle of pentagon $(180 \times 3) \div 5 (= 108)$ oe Interior angle of octagon $(180 \times 6) \div 8 (= 135)$ oe (CBF \Rightarrow) $360 - ("108" + "135") (= 117)$		4	M1 or exterior angle of pentagon = $\frac{360}{5} (= 72)$ or exterior angle of octagon = M1 $\frac{360}{8} (= 45)$ M1 (CBF \Rightarrow) "72" + "45" (= 117) A1	31.5

25	(a)		k^{15}	1	B1
	(b)		$5y^4$	2	B2 B1 for fully simplifying terms in x or terms in y
	(c)	$h - f = 3e$ or $\frac{h}{3} = e + \frac{f}{3}$ or $\frac{h - f}{3}$	$e = \frac{h - f}{3}$	2	M1 A1 oe, accept $e = \frac{f - h}{-3}$