"BETWEEN PAPERS" PRACTICE

SET 2 OF 2 - F&H (MOST QUESTIONS!)

SUMMER 2018

EXAMINERS REPORT & MARKSCHEME

NOT A "BEST" GUESS PAPER.

NEITHER IS IT A "PREDICTION" ... ONLY THE EXAMINERS KNOW WHAT IS GOING TO COME UP! FACT! YOU ALSO NEED TO REMEMBER THAT JUST BECAUSE A TOPIC CAME UP ON PAPER 1 OR PAPER 2 IT MAY STILL COME UP ON PAPER 3 ...

WE KNOW HOW IMPORTANT IT IS TO PRACTICE, PRACTICE, PRACTICE .... SO WE'VE COLLATED A LOAD OF QUESTIONS THAT WEREN'T EXAMINED IN THE PEARSON/EDEXCEL 9-1 GCSE MATHS PAPER 1 OR PAPER 2 BUT WE CANNOT GUARANTEE HOW A TOPIC WILL BE EXAMINED IN THE NEXT PAPERS ...

ENJOY!
MEL & SEAGER

Q1. Only a minority of students chose to derive a set of simultaneous equations to solve. The majority of students used a trial and improvement approach to the solution, which could only be credited on giving the correct answers. Common incorrect answers scoring 0 marks were £7.50 (from 30÷4) and £5.50 (from 22÷4).

Q2. This standard question was well understood by the candidates. They were able to invert the process and the order and so end up with the correct answer of 30. Several candidates selected the wrong number (usually 50) from an equation in which the correct answer was embedded and a few subtracted 10 from 50 and then divided by 2 giving an answer of 20

Q3.A good number of fully correct answers were seen, usually achieved with well drawn tree diagrams. A significant number opted for the "replacement" method, scoring B2 for 0.44. There were some poor answers to this question usually confusing when to add and multiply probabilities, and numerical manipulation was poor here, despite the availability of calculators. Centres should ensure candidates can use calculators to manipulate fractional values.

Q4. It was pleasing to note that many candidates scored all 4 marks for parts (a) and (b). It was surprising to see how many candidates ordered the numbers for part (b), circled both 2's in the centre and then wrote an answer of 2.5, clearly not coping with a number between 2 and 2! There were some candidates who found the mean instead of the median or range. Virtually all candidates could complete the frequency column in the table correctly. Not many candidates scored in part (d). The vast majority of candidates gave an answer of 4 or 5 and some gave an answer of 10 from 1+2+3+4 in part (d). Part (e) had even fewer correct answers with 40 being by far the most common incorrect answer.

Q5. Many were able to give the correct answer of 4n-2 in part (a), with 4n or 2n+4 being the most common incorrect answers.

Irrespective of the quality of response in part (a), many went on to provide a perfectly reasonable explanation in part (b), many by continuing the sequence up to 86. Incomplete answers referred just to the fact that they were even numbers, or had to include 2,6,4,8.

Q6. Many candidates understood what the question was asking and were successful in both parts. A few candidates wrote the word 'positive' in (a) and did not score as the words 'positive correlation' needed to be seen. However most candidates wrote that as the rain increased so did the sales of umbrellas thereby scoring the available mark. Most candidates who were successful in part (b) drew a line of best fit to use to obtain their answer. Overall, this question was well-answered by most candidates.

Q7. Most candidates successfully answered all parts to this question although there were many careless errors in part (d) such as thinking the shape had 6 sides or writing 540 ÷ 5 = 108 and then writing 180 in the answer space. The most common incorrect response was 540 ÷ 3 = 180 or 180 on the answer line without any working.

Q8. This was largely a test of memory. About two thirds of the students gained the marks in these short questions.

Q9. The number of students writing down the correct answer to the first part of this question was disappointing. Many students clearly did not understand the term "reciprocal". The incorrect answers $1\frac{1}{4}$ and $\frac{5}{4}$ were commonly seen.

Part (b) of the question attracted more correct answers than part (a) though many students found the value of $\frac{9.6}{\sqrt{5-1.7}}$ (= 5.28...) instead of the expression given. This seemed to indicate a lack of familiarity with the correct use of their calculator, in particular with how to use the square root function. Students are advised to check more carefully that the expression they are evaluating is the same as the expression they should be evaluating. Very few students who gave an incorrect answer showed intermediate calculations so one mark was rarely awarded.

Q10. Many gained full marks on this question, even though the quadratic was a "take from". There were some errors in calculating the numbers for the table, but the main error was in drawing the graph as a series of line segments, rather than as a curve.

Q11. In part (a) too many students failed to understand the term "translate"; this was evidenced by examples of rotations and reflections. Part (b) was answered with greater success. Many noted it was a rotation, and this was usually followed by a description of direction and angle, with only a minority making errors in this statement. Missing out a reference to the centre of rotation was a common error.

Q12. Sometimes probability questions of this kind require the candidates to deduce that it is a case of non-replacement. In this question it was clearly stated that the counter taken first was kept before taking the second. But still many candidates ignored this detail and therefore both their tree diagrams and subsequent solutions were flawed. IN part (a) the probability tree diagram was incomplete, but nearly all candidates presented the remaining branches correctly to support their probabilities; only a small number failed to include any labels on their branches.

Part (b) was answered well; the only error in some was adding their probabilities rather than multiplying them. Those who made this error in part (b) did so also in part (c), but there the main error was in finding the probability for two counters with one letter A, rather than the probability for at least one counter with the letter A.

Q13. There were many correct answers with most of the correct answers coming from having drawn a two-way table. Those that did not draw a two-way table tended to make errors along the way and write a series of calculations all over the page such that it was difficult to follow what they were trying to do.

Q14. A sizeable number of students made no attempt at this question and it was rare to see a fully correct answer. However, many students were able to state at least one bound (either 4.755 or 4.765) and were rewarded with one mark out of the two marks available. Where inequality signs were used by students, and this was not very common, they were often used incorrectly.

Q15. Part (a) was well answered by many. In part (b) the correct answer was often seen. Some working was also shown and this usually gained credit if the final answer was not correct. For example, 6.5×10=60.5 was a common incorrect answer which, as working, could gain a mark but if 0.5 was seen as the answer only students did not score.

Q16. Students were most successful in part (a) and almost all were able to measure the distance between the bench and the fountain to gain the mark. Weaker students forgot to multiply their measurement by 2.

In part (b), students usually either gained the full 2 marks or 0, as those that did not understand bearings rarely drew anything on the diagram. There were however, a few that had drawn in the bearing then incorrectly measured the angle leading to an answer in the 70s.

Students attempted part (c) well and often, even if not worthy of any marks, were still using compasses to draw arcs. Many gained full marks or two marks having shaded the wrong region. Only the very weakest students were shading a square or irregular shaped region, though even these regions were shaded in-between the fountain and the bench, indicating some understanding of the problem even if they scored 0 marks.

Q17. This question was well attempted by students with blank responses rare but as many students scored one mark as scored full marks. Students tended to use the 'big to small' ratios of rectangles rather than the ratio of the sides in each rectangle but both methods were equally successful. Weaker students usually scored one method mark for correctly calculating the side lengths of the rectangle PQRS but then demonstrated a lack of understanding of the concept of similarity and calculated the area of the rectangles or the perimeter. Some of the better students failed to simplify their ratios sufficiently to demonstrate, clearly enough for QWC, that the scale factors were not equal.

Q18. Very few attempts using algebra were seen. When they were tried they were often wrong from the start. Common (mis)representations of the ages were y^2 and $3 - y$. More understandable was $2y$ and $2y - 3$, showing basic algebra skills combined with a lack of care when it comes to reading the text. However, students who did attempt an algebraic approach were able to pick up marks for writing at least one correct expression for one of the two ages, for setting up an equation involving the students' expressions for three ages and also for solving an equation of the form $ay + b = c$ using correct processes. Ages obtained from trial and improvement approaches were often seen – these scored either 4 marks for a completely correct answer to 0 marks for a partially correct or incorrect answer.

Mark Scheme

Q1.

PAPER: 1MA0_2H					
Question		**Working**	**Answer**	**Mark**	**Notes**
		$3x + y = 30$ $x + 3y = 22$	8.50 4.50	4	M1 for forming two algebraic equations M1 for a correct process to eliminate one variable (condone one arithmetic error) M1 (dep) for substituting found value in one of the equations or appropriate method after starting again (condone one arithmetic error) A1 for 8.5(0) and 4.5(0)

Q".

Question		**Working**	**Answer**	**Mark**	**Notes**
			30	3	M1 for 50 + 10 (= 60) or 50 ÷ 2 (= 25) M1 for correct order of operations + 10 then ÷ 2 A1 cao

Q3.

		Working	**Answer**	**Mark**	**Notes**
		$\frac{6}{10} \times \frac{5}{9} + \frac{2}{10} \times \frac{1}{9} + \frac{2}{10} \times \frac{1}{9}$ $\frac{30}{90} + \frac{2}{90} + \frac{2}{90}$	$\frac{34}{90}$	4	B1 for $\frac{5}{9}$ or $\frac{1}{9}$ or $\frac{1}{9}$ seen as 2nd probability M1 for $(\frac{6}{10} \times \frac{5}{9})$ or $(\frac{2}{10} \times \frac{1}{9})$ or $(\frac{2}{10} \times \frac{1}{9})$ M1 for $(\frac{6}{10} \times \frac{5}{9}) + (\frac{2}{10} \times \frac{1}{9}) + (\frac{2}{10} \times \frac{1}{9})$ A1 for $\frac{34}{90}$ oe **With replacement** B0 for $\frac{6}{10}$ or $\frac{2}{10}$ or $\frac{2}{10}$ seen as 2nd probability M1 for $(\frac{6}{10} \times \frac{6}{10})$ or $(\frac{2}{10} \times \frac{2}{10})$ or $(\frac{2}{10} \times \frac{2}{10})$ M1 for $(\frac{6}{10} \times \frac{6}{10}) + (\frac{2}{10} \times \frac{2}{10}) + (\frac{2}{10} \times \frac{2}{10})$ A1 for $\frac{44}{100}$ oe S.C award B2 for $\frac{44}{100}$ or $\frac{34}{100}$ or $\frac{44}{90}$ oe

Q4.

PAPER: 5MB1F_01					
Question		Working	Answer	Mark	Notes
	(a)		2	2	M1 for attempt to order or two middle unordered numbers selected A1 cao
	(b)		4	2	M1 for 5 – 1 or 1 – 5 or 1 to 5 A1 cao
	(c)		18 11 7 3 1	1	B1 cao
	(d)		40	1	B1 for 40 or ft their frequencies
	(e)	$18\times0 + 11\times1 + 7\times2 + 3\times3 + 1\times4 =$	38	2	M1 for Σfx A1 cao [SC: no working- B1 for 56]

Q5.

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
	(a)		$4n - 2$	2	B2 for $4n - 2$ oe (B1 for $4n + k$, $k \neq -2$ or k is absent, or $n = 4n - 2$)
	*(b)		Yes + reason	1	C1 ft from (a) for decision and explanation, e.g. equating 86 with nth term **and** "Yes, its the 22nd term" or continuing the sequence up to 86 **and** "Yes, 86 is in the sequence" oe

Q6.

PAPER: 5MB1F_01					
Question		Working	Answer	Mark	Notes
	(a)		Positive correlation	1	B1 for positive correlation or the greater the rainfall the more umbrellas sold oe
	(b)		52 – 58	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 28 on the x-axis A1 for an answer in the range of 52 – 58

Q7.

PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
	(a)		hexagon	1	B1 for (regular) hexagon
	(b)		D, E	1	B1 cao
	(c)		A	1	B1 cao
	(d)		108	2	M1 for $540 \div 5$ A1 cao

Q8.

5MB3F_01 November 2015					
Question		Working	Answer	Mark	Notes
	(a)		decagon	1	B1 cao
	(b)		1440	1	B1 cao

Q9.

PAPER: 5MB3H_01					
Question		Working	Answer	Mark	Notes
	(a)		0.8	1	B1 for 0.8 or $\frac{4}{5}$
	(b)		17.90 – 17.91	2	B2 for 17.90 – 17.91 (B1 for 0.53...)

Q10

5MB3F_01 November 2015					
Question		Working	Answer	Mark	Notes
	(a)		0, 4, 3, −5	2	M1 for one correct value, could be taken from graph A1 cao
	(b)		correct curve	2	M1 for at least 4 points plotted correctly from table A1 for correct curve drawn

Q11

PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
	(a)		Triangle	2	B1 for triangle translated B1 for triangle at (−2,2),(−2,0),(−1,0)
	(b)		Rotation 90° anticlock wise centre (0,0)	3	B1 Rotation B1 90° anticlockwise oe B1 centre (0,0) Note Award no marks if more than one transformation is given

Q12

5MB1H/01 June 2015				
Question	Working	Answer	Mark	Notes
(a)		Probability tree	3	B1 for $\frac{2}{8}$ in the correct place B1 for $\frac{5}{7},\frac{2}{7};\frac{6}{7},\frac{1}{7}$ in the correct place on a probability tree B1 complete probability tree with labelling eg A, B etc.
(b)		$\frac{30}{56}$	2	M1 $\frac{6}{8}\times\frac{5}{7}$ A1 oe eg 0.5357.... or $\frac{15}{28}$
(c)		$\frac{54}{56}$	3	M1 for $\frac{6}{8}\times\frac{5}{7}$ or $\frac{6}{8}\times\frac{2}{7}$ or $\frac{2}{8}\times\frac{6}{7}$ oe eg 0.5357… or 0.214… M1 for $\frac{6}{8}\times\frac{5}{7}+\frac{6}{8}\times\frac{2}{7}+\frac{2}{8}\times\frac{6}{7}$ or $1-\left(\frac{2}{8}\times\frac{1}{7}\right)$ A1 oe eg 0.964.... or $\frac{27}{28}$

Q13.

PAPER: 5MB1H_01							
Question	Working					Answer	Mark	Notes
		Co	Ju	Wa	Total	34	4	M1 for a two-way table with clear labelling showing at least 3 values of the given information correctly placed M1 for 54 or 20 M1 for 9 or 12 A1 cao OR M1 for 37 – 17 (=20) M1 for 45 – ('20' + 16) (= 9) M1 for 25 + '9' (=34) A1 cao OR M1 for 99 – 45 (=54) M1 for 54 – (17 + 25) (=12) M1 for 99 – (37 + 12 + 16) (=34) A1 cao
	B	25		17				
	G		16		45			
	Total			37	99			
	OR 37 – 17 = 20 45 – (20 + 16) = 9 25 + 9 =34 OR 99 – 45 =54 54 – (17 + 25) =12 99 – (37 + 12 + 16) = 34							

Q14.

Question	Working	Answer	Mark	Notes
		$4.755 \leq n < 4.765$	B2	for $4.755 \leq n < 4.765$
			[B1	for 4.755 or 4.765 or $4.764\dot{9}$]

Q15.

5MB3F/01 June 2015				
Question	Working	Answer	Mark	Notes
(a)		057	1	B1 for (0)55 to (0)59
(b)		65	2	M1 for 6.5±2mm or "6.5" × 10 A1 ft for 65

Q16

PAPER: 5MB3F_01				
Question	Working	Answer	Mark	Notes
(a)		15.2 – 15.6	1	B1 for 15.2 – 15.6
(b)		107 – 111	2	M1 for correct bearing clearly identified on diagram A1 for 107 – 111
(c)		Region shaded	3	B1 for circle centre f, radius 3.5cm B1 for circle centre b, radius 6cm B1 for correct region shaded

Q17.

5MB3H/01 June 2015				
Question	Working	Answer	Mark	Notes
*		No with comparison of correct figures.	3	M1 for correct method to find frame dimensions 15+5+5 (=25) and 10+5+5 (=20) M1 for finding relationship between length and width for both eg 15 ÷ 10 (=1.5) and 25 ÷ 20 (= 1.25) or for correct use of a scale factor to find a comparable length C1 for correct conclusion following comparison of 2 correct comparable figures

Q18.

Question		Working	Answer	Mark	Notes
			32 64 29	4	M1 for $2y$ or $y - 3$ M1 for adding their three expressions and setting equal to 125 M1 for correct method to solve $ay + b = 125$ A1 Ali 32, Bhavara 64 and Ceris 29