JustMaths

BUMPER "BETWEEN PAPERS" PRACTICE PAPER

SET 3 (OF 3)

FOUNDATION TIER (SUMMER 2017)

EXAMINERS REPORTS & 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 IT MAY STILL COME UP ON PAPERS 2 OR 3 ...

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

ENJOY!

MEL & SEAGER

EXAMINERS COMMENTS

Q1. The first three parts of this question were answered well, the only error being those who reversed the coordinate values, though it was not uncommon to see this error only in the first two parts. In part (d) many offered y=3 as the line, or a diagonal line through the point (3,0).

Q2. This question was not always attempted. When it was attempted, a common error was for students to calculate $10^2 + 5^2$ rather than $10^2 - 5^2$ in their application of Pythagoras' Theorem. Premature rounding led some students to lose accuracy in their answers and consequently score 3 out of the 4 marks available.

Q3. Very few candidates were able to show a clear set of steps starting with correctly identifying the missing sides on the diagram, then adding their terms, arriving at $6x + 10$ and then showing that this factorises to $2(3x + 5)$, however, they did realise that they needed to show some working out and rarely did candidates just offer a purely worded answer.

Many failed to attempt this question leaving a blank response. Some expanded $2(3x + 5)$ but did nothing else so also achieved no marks. A few candidates did start by identifying the missing sides achieving b1 for $x + 2$ or $2x + 3$ and some went on to also achieve m1 for adding the sides, however, there were frequent examples of incorrect simplifying eg $2x + 3 = 5x$ both in candidates working out and written by the diagram.

Some of these candidates did however manage to pick up M1 by demonstrating that they understood that for perimeter they needed to add all the terms for the side lengths though often failed to get A1 as they had incorrectly assigned numbers to the missing sides or incorrect algebraic terms.

Q4. In part (a) the majority of students were able to convert at least one of the given fractions to an improper fraction. Some students confused techniques for other operations at this point and tried to express the fractions with a common denominator. Those that were successful in achieving the correct multiplication were often unable to convert back to a mixed fraction in its simplest form. The most common answers were $\frac{42}{15}$, $\frac{14}{5}$ or $\frac{212}{15}$

In part (b) students generally scored full marks or no marks. Many who converted to improper fractions were unable to convert these to fractions with the same common denominator. Often they found the common denominator but failed to find the correct numerator. Very few subtracted the whole numbers and then dealt with the fractions. There appears to be widespread misunderstanding of the processes involved.

Q5. Part (a) was well attempted by most candidates with many scoring full marks. In most cases those who didn't score full marks either wrote an expression containing $4n$ scoring B1 or wrote $n + 4$ scoring B0. There were very few responses seen with other coefficients of n.
Part (b) was well attempted by most candidates though more candidates were successful in part (a). The most common incorrect response was 907, however, those candidates who presented full working out and initially wrote $3 \times 10^2 + 7$ followed by $30^2 + 7$ did earn at least M1, unfortunately in most cases candidates wrote $3 \times 10 = 30$, $30^2 = 900$, $900 + 7 = 907$. Candidates who tried to generate all the terms of the sequence were usually unsuccessful.

Q6. Part (a) was done quite well. Many students simply wrote the answer (5) on the answer line. Few students started their answer by writing a suitable equation for one or both of the sides of the rectangle. A significant number of students wrote down an expression for the perimeter of the rectangle and were then unable to make any further progress with the solution. Part (b) was done quite well. A significant number of students attempted this question by trial and improvement. A common correct answer using this approach was $30 + 60 + 90 = 180$ (so $y = 30$). A common incorrect answer was $180 \div 3 = 60$, $180 \div 2 = 90$, $180 - 60 - 90 = 30$. Many of those students attempting an algebraic approach were not able to formulate a suitable initial equation using all of the angles. A common incorrect answer

here was 36, usually obtained via $2y + 3y = 35$, $180 \div 5 = 36$ (so $y = 36$).

Q7. Part (b) differentiated well. It was also a question testing the qwc so it was essential that a method was shown. The more able candidates realised that drawing a graph to show Ed's costs was the most efficient method of solution. Candidates who took this approach then generally made a correct statement that referred to 20 miles (the break-even point). Less able candidates used the information given and the graph to find the delivery costs for a particular distance and then either made a comment or just left the calculations as their final answer. It was not uncommon to see calculations which failed to refer to distance or Bill or Ed. Some failed to gain any marks as they just focused on comparing the fixed charges or cost per mile or a combination of these in a general way. Others were confused by Bill's £10 fixed charge and added it on twice, eg if he went 10 miles then they said that he charged £30 (£20 plus his £10 fixed charge).

Q8. Overall a poor understanding of bearings was displayed. Many students simply gave a distance rather than a bearing in part (a).
In part (b) many students just drew a line to from T to L. Students really must read the question given. Those who did complete a correct bearing did not appreciate that the perpendicular distance from the bearing line to the lighthouse was the shortest distance.

Q9. This question was not well done. Less than 1 in 10 candidates scored full marks with a further 2 in 10 candidates scoring part marks. The most successful candidates used a common sense approach realising that at an average speed of 50 mph Aysha would cover a distance of 25 miles in half an hour and that for the second part of the journey, a speed of 60 mph is equivalent to an average of 1 mile per minute.

A significant proportion of candidates earned the mark available for the time it took Aysha to drive from A to B, the first part of her journey. Fewer candidates obtained the correct time for the second part of the journey. Many of them gave the time taken to travel from B to C as 24 minutes. Evidence seen suggested that these candidates had worked out $60 \div 25$ (=2.4) and interpreted their answer as 24 minutes. Many of these candidates went on to work out "30 – 24" and so earned a second mark for working out the difference of their times (with at least one correct).

Another error commonly seen was for candidates to divide speed by distance getting answers of 2 and 2.4 and then interpreting the difference as 40 minutes. Candidates often made errors converting between units of time and some weaker candidates either multiplied the speed by the distance for each part of the journey or simply found the difference between the two speeds giving their answer as "10".

Q10. This was a well answered question. Some weaker students failed to recognise that the Doll required a sale price and instead gave the answer as £1.50.

Q11. There were a good number of fully correct answers seen to this question. However, a more typical response included a correct calculation of the cost of buying the nails from the Nail Company but an incorrect calculation of the cost of buying the nails from the Hammer Company. Many students were unable to deal correctly with the special offer, costing the inclusion of 125 free nails rather than 100. Students' working was generally written down clearly but not always presented in a logical order. Most students gave a clear statement to conclude their working.

Q12. Drawing and labelling a set of axes correctly was the main initial fault here, costing very many students the first mark. Axes needed to be correctly labelled x and y and linear scales including the origin. A number of L-shaped axes were seen, labelling as if in one quadrant from an "origin" of $y = -7$ and $x = -2$. The most successful students showed a clear table of

values with x and y clearly labelled ready to plot points easily. A number of students lost a final mark because they did not join their correctly plotted points together.

Q13. In part (a) nearly all of the candidates correctly identified Thursday as the day Sophie and Zach spent the same time on the internet. Only the very weakest candidates answered this incorrectly.
In part (b) majority of candidates correctly read Zach's bar for Friday. Incorrect responses were varied and usually resulted from reading Sophie's bar or the wrong day.

In part (c) the question was correctly attempted by a number of candidates who correctly drew two bars and shaded them appropriately. The most common incorrect responses, which in most cases still gain 1 mark, were to misread the scale and draw a bar of length ≈ 12.5 units for Sophie or to draw Zach's bar to the edge of the chart hence 65 and not 60. Though rare, some blank responses were seen.

In part (d) nearly half of candidates gave a correct comparison of the time spent on the internet by Sophie and Zach for the week. Most candidates over complicated the question and instead of simple statements such as 'Sophie spent more time on the internet than Zach at the start of the week' or vice versa, calculated the total time spent on the internet by each person, which although successful for many, was unsuccessful for far more due to poor arithmetic. Other incorrect responses talked about Sophie or Zach's time increases and decreasing throughout the week but did not compare Sophie to Zach.

Q14. Just under half the candidates identified the trapezium in part (a) although misspellings were common. Those that failed to name the shape correctly gave a wide variety of other quadrilateral names instead with rhombus and parallelogram most frequently seen. Part (b) was poorly answered with less than 5% of candidates giving chord and others using all other names for circle parts demonstrating poor knowledge of these terms.
In part (b) candidates had more success counting faces than vertices. Several omitted to count one or both end faces so a response of 5 or 6 was common but candidates were clearly less confident with vertices and a wide variety of responses were seen.

Q15. This whole question was very well answered by the vast majority of candidates. In part (a), most candidates calculated the correct missing values; only a few weaker candidates got -5 instead of 5 for y when $x = -3$.

In part (b), the vast majority of candidates gained full marks for a good curve. Only a few used straight line segments, which prevented them from gaining full marks. Overall the quality of graph drawing was an improvement on previous years.

Q16. Very few students offered a convincing, fully correct solution to this question. Many demonstrated confusion between interior and exterior angles; 72o was often seen as an interior angle in the diagram. Even those giving the interior angle as 108o, often then failed to complete the solution correctly; many times angle BCD was shown as 108o and angle ACF as 90o followed by working just showing $108 - 90$ or $90 - 72$. Even though this gave the correct numerical answer, it was clear that it was the result of an incorrect method. Some students, even though they found an interior angle, thought that angle ABC was 90 or assumed that triangle ABC was equilateral. It was also fairly common to see AC as a bisector of angle BCA.

Q17. This question was a good discriminator. Many of the weaker candidates were unable to make a good attempt at it but the more able candidates often gained full marks. Most candidates used a tree diagram with mostly correct branches and the majority recognised that there was no replacement. Some went on to include a third set of branches or had 18 as the denominator for the second set of branches. The most common approach was to add six products with most candidates selecting the correct pairs of probabilities. Arithmetic errors

did occasionally lead to loss of the final accuracy mark. Far fewer candidates attempted the method of 1 – (probability of two of the same type) which is a quicker way of working out the required probability. Those who used replacement often earned both of the two marks available for this approach and some scored one mark for having at least one correct product. Most candidates used fractions throughout and gave their answer as a fraction or converted it to a decimal at the end. Some converted to decimals at an earlier stage and often lost accuracy as a result of premature rounding. For the weaker candidates the tree diagram was often all they managed; they did not know what to do with the probabilities and some added rather than multiplied the probabilities.

Q18. Part (a) was answered correctly more often than part (b).

The common error in part (a) was to apply Pythagoras' Theorem incorrectly, adding rather than subtracting the squares of the lengths.

In part (b), it was evident that a significant number of candidates were unable to identify angle *RPQ* correctly and, instead, attempted to find angle *RQP*. Candidates at this level are expected to be able to use three-letter notation for angles. The majority of candidates who realised that they had to use cosine in part (b) went on to gain full marks.

Many candidates used Pythagoras' Theorem, finding the missing length and giving this as their answer, clearly not understanding the need to use the trigonometric ratios to find angles. Other candidates did complicate their answer by using Pythagoras' Theorem correctly to find the third side and then used sin or tan correctly; in this case the final accuracy mark was often lost due to premature rounding.

Q19. Part (a) was usually well answered, with $12x + 5$ being the most common incorrect answer.

This error was commonly replicated in part (b), where both $2x - 4$ and $3x + 5$ were seen. Many candidates could not resolve $-8 + 15$ into a single number correctly, thereby losing the second mark. An answer of 23 was common when the negative sign was ignored.

In part (c), some answers were spoilt by candidates adding together the x and x^2 terms. A common error was in giving 10 as the number term rather than 24, or writing $x \times x$ as $2x$. Although there were no negative signs in the question, some candidates included them in their solution. 7

Q20. This was a well answered question. Nearly all students recognised that deduction from 100 was needed, and most also associated this with the need to divide by 3 to find the value of x. However, a very common error was $0.15 \div 3 = 0.5$

In part (b) there were many correct answers. A few wrote their answer incorrectly as a probability, and a few chose to use a colour other than red.

Q21. For part (a) most students scored marks. The correct construction method was the most successful. Some students lost marks where it was clear the compass settings were changed or adjusted mid construction. Compasses should be well maintained. The most common error was to draw arcs from the ends of the given lines.

In part (b) marks were obtained by the majority of those who attempted this part. It was disappointing that many constructed a perpendicular bisector of QR which did not pass through the point P.

Students need to leave full construction arcs in their final solution; these were sometimes difficult to assess as they were partially erased.

Q22. Surprisingly few candidates reached the correct final answer with units on a relatively

straightforward circumference question, albeit in the context of ribbon round a cake. Several candidates used the area formula or missed the required units. The mark for giving centimetres associated with a final answer was gained by others who had made no progress with circumference.

Q23. Many candidates were able to score the three marks for finding $x = 70$. The two marks for giving correct reasons proved more elusive as many candidates simply described the process they had used to reach 70 but failed to give any correct geometrical reasons.

Most candidates were not able to give full clear statements with the correct naming of the type of angles used. Some gained one mark for giving at least one correct reason (quite often this was 'opposite angles').

The minimal phrases that were often used, e.g. 'straight line' rather than 'angles on a straight line add up to 180°' and 'isosceles triangle' instead of 'base angles of an isosceles triangle are equal', were insufficient to gain any credit. Some candidates referred to '*F* angles' and '*Z* angles' instead of 'corresponding angles' and 'alternate angles' and this is not acceptable.

Q24. Not available

MARKSCHEME

Q1.

PAPER: 1MA0_1F				
Question	Working	Answer	Mark	Notes
(a)		2, 1	1	B1 cao
(b)		–2, 3	1	B1 cao
(c)		Point marked	1	B1 for point marked at (–3, –1)
(d)		Line $x = 3$ drawn	1	B1 for line $x = 3$ drawn

Q2.

PAPER: 5MB3H_01					
Question		Working	Answer	Mark	Notes
			9.54	4	M1 for $10^2 - 5^2$ (= 75) or (BD =) 10 × cos 30 (= 8.66...) M1 for "75" + 4^2 (= 91) or "8.66..."^{2} + 4^2 (= 91) M1 for $\sqrt{(10^2 - 5^2 + 4^2)}$ or $\sqrt{(\text{"8.66..."}^2 + 4^2)}$ A1 for 9.53 – 9.54

Q3.

Question		Working	Answer	Mark	Notes
*		x+2 + 2x+3 + 2x + x + 3 + 2 = 6x + 10 =2(3x + 5) OR Half way round × 2 = (x+2 + 2x+3) × 2 = 3x + 5 Perimeter = 2(3x + 5)	Proof	4	B1 for x + 2 or 2x + 3 seen M1 for perimeter = "x+2" + "2x+3" + 2x + x + 3 + 2 oe A1 for 6x + 10 C1 (dep) for factorising 6x + 10 to give 2(3x + 5) OR B1 for x + 2 or 2x + 3 seen M1 for 2 × ("x+2" + "2x+3") A1 for 6x + 10 C1 (dep) for doubling 3x + 5 to give perimeter = 2(3x + 5)

Q4.

Question	Working	Answer	Mark	Notes
(a)		$2\frac{4}{5}$	3	M1 for writing as improper fractions eg $\frac{6}{5}$ or $\frac{7}{3}$ M1 (dep) for multiplying improper fractions eg $\frac{6\times7}{5\times3}$ or $\frac{14}{5}$ oe A1 cao
(b)		$\frac{4}{5}$	3	M1 for finding two correct fractions with a common denominator eg $\frac{7}{15}-\frac{10}{15}$ or $\frac{21-30}{45}$ M1 (dep) for complete and correct method eg $1-\frac{3}{15}$ or $\frac{37}{15}-\frac{25}{15}$ or $\frac{111-75}{45}$ oe A1 for $\frac{4}{5}$ oe

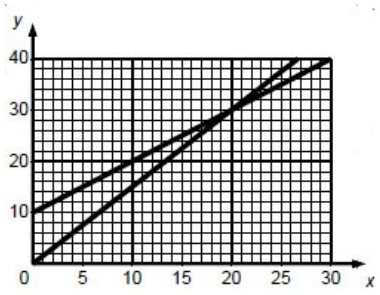
Q5.

		Working	Answer	Mark	Notes
	(a)		$4n - 3$	2	B2 for $4n - 3$ oe (B1 for $4n + k$, $k \neq -3$ or $n = 4n\text{-}3$)
	(b)		307	2	M1 for substitution of 10 into $3n^2+7$ $(=3\times10^2+7)$ A1 cao

Q6.

Question		Working	Answer	Mark	Notes
	(a)		5	2	M1 for equating sides, eg $x + 1 + x - 1 = 10$ or $2x = 10$ or $x + 1 = 6$ or $x - 1 = 4$ A1 for $(x =) 5$
	(b)		30	2	M1 for $1y + 2y + 3y = 180$ oe or $180 \div 6$ (=30) A1 cao

Q7.

Question		Working	Answer	Mark	Notes
	(a)		10	1	B1 cao
	(b)	 **Miles** 0 10 20 30 40 50 **Ed** 0 15 30 45 60 75 **Bill** 10 20 30 40 50 60	Ed is cheaper up to 20 miles, Bill is cheaper for more than 20 miles	3	M1 for correct line for Ed intersecting at (20,30) ±1 sq tolerance **or** $10 + x = 1.5x$ oe C2 (dep on M1) for a correct full statement ft from graph eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion ft from graph eg. cheaper at 10 miles with Ed ; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **OR** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) **OR**

					M1 for correct method to work out Ed's delivery cost for at least 2 values of n miles where $0 < n \leq 50$ **OR** for correct method to work out Ed and Bill's delivery cost for n miles where $0 < n \leq 50$ C2 (dep on M1) for 20 miles linked with £30 for Ed and Bill with correct full statement eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion eg. cheaper at 10 miles with Ed; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **OR** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) SC : B1 for correct full statement seen with no working eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles QWC: Decision and justification should be clear with working clearly presented and attributable

Q8.

PAPER: 1MA0/1H				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		049	1	B1 for answer in range 47 to 51
(b)		12	2	M1 for line drawn on a bearing of 320° ±2° A1 for answer in range 10 to 14

Q9

Question		Working	Answer	Mark	Notes
		25 ÷ 50 = 0.5 h = 30 min 25 ÷ 60 = 0.416 h = 25 min	5	3	M1 for 25 ÷ 50 **or** $^{60}/_{50}$ × 25 **or** 30 (min) **or** 0.5(h) **or** 25 ÷ 60 **or** $^{60}/_{60}$× 25 **or** 25 (min) **or** 0.41(6)(h) M1(dep) '0.5' –'0.41(6)'**or** '30' – '25' A1 cao OR M1 for 60 ÷ 25 (= 2.4) and 60 ÷ "2.4" **or** 50 ÷ 25 (= 2) and 60 ÷ "2" M1(dep) for '30' – '25' A1 cao

Q10.

PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
			4.50 1.40 3.90	3	B1 cao B1 cao B1 ft sum of stated profit figures

Q11.

PAPER: 5MB3H_01					
Question		Working	Answer	Mark	Notes
*		1.2 × (550 ÷ 50) × £4.15 = £54.78 4 × £2.95 × 4 + 2 × £2.95 = £53.10	Hammer company	5	M1 for 20% of a cost in Nail Company, eg 4.15 × 0.2 (= 0.83) oe M1(dep) for adding their 20% to their cost, eg 4.15 × 1.2 (= 4.98) oe M1 for using special offer in Hammer Company M1 for 4 × 125 and 2 × 25 in Hammer Company C1 for Hammer Company and figures 54.78 [Nail Company] and 53.1(0) [Hammer Company]

Q12.

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
		x -2 -1 0 1 2 3 y -7 -5 -3 -1 1 3	Straight line from (–2, –7) to (3, 3)	4	**(Table of values)** C1 for axes scaled and labelled M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = -2$ and $x = 3$ **(No table of values)** C1 for axes scaled and labelled M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 2x - 3$ drawn A1 for correct line between $x = -2$ and $x = 3$ **(Use of $y = mx+c$)** C1 for axes scaled and labelled M1 for line drawn with gradient of 2 OR line drawn with a y intercept of –3 M1 for line drawn with gradient of 2 AND with a y intercept of –3 A1 for correct line between $x = -2$ and $x = 3$ [SC B2 (indep of C1) for the correct line between $x = 0$ and $x = 3$, ignore any additional incorrect line segment(s)]

Q13.

Question		Working	Answer	Mark	Notes
	(a)		Thursday	1	B1 cao
	(b)		45	1	B1 cao
	(c)		Bar chart completed	2	B2 for bars of correct length, correctly shaded (condone Sophie's bar left unshaded) (B1 for one correct length bar with correct shading or two correct length bars with incorrect or no shading)
	(d)		Comparison	1	B1 for one correct comparison, e.g. Sophie spent more time (on the Internet) at the beginning of the week than Zach (Note: if candidates quote total amounts of time spent on the internet they must be correct or support by evidence of how they got them. Sophie: 215min or 3h35min Zach: 240min or 4h)

Q14.

Question		Working	Answer	Mark	Notes
	(a)		Trapezium	1	B1 for trapezium ignore spellings
	(b)		Chord	1	B1 ignore spellings
	(c)(i)		7	2	B1 cao
	(ii)		10		B1 cao

Q15.

		Working	Answer	Mark	Notes
	(a)		5, −4, −3	2	B2 for 5, −4 and −3 (B1 for 5 or −4 or −3)
	(b)		correct curve	2	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)

Q16.

PAPER: 1MA0_1H				
Question	**Working**	**Answer**	**Mark**	**Notes**
		18	4	M1 for a method to find the exterior angle of a pentagon eg. 360 ÷ 5 (=72) or the interior angle of a pentagon, eg. 180 – 360 ÷ 5 (= 108) A1 for 72 or 108 M1 (dep M1) for a fully complete method to find the required angle, *DCF* A1 for 18 or ft their interior or exterior angle

Q17.

Question	Working	Answer	Mark	Notes
	$^{12}/_{20} \times {}^{11}/_{19} + {}^{5}/_{20} \times {}^{4}/_{19} + {}^{3}/_{20} \times {}^{2}/_{19}$ $1 - ({}^{12}/_{20} \times {}^{11}/_{19} + {}^{5}/_{20} \times {}^{4}/_{19} + {}^{3}/_{20} \times {}^{2}/_{19})$	$^{222}/_{380}$	4	B1 for $^{12}/_{19}$ or $^{5}/_{19}$ or $^{3}/_{19}$(could be seen in working or on a tree diagram) M1 for $^{12}/_{20} \times {}^{5}/_{19}$ *or* $^{12}/_{20} \times {}^{3}/_{19}$ *or* $^{5}/_{20} \times {}^{12}/_{19}$ *or* $^{5}/_{20} \times {}^{3}/_{19}$ *or* $^{3}/_{20} \times {}^{12}/_{19}$ *or* $^{3}/_{20} \times {}^{5}/_{19}$ M1 for $^{12}/_{20} \times {}^{5}/_{19} + {}^{12}/_{20} \times {}^{3}/_{19} + {}^{5}/_{20} \times {}^{12}/_{19} + {}^{5}/_{20} \times {}^{3}/_{19} + {}^{3}/_{20} \times {}^{12}/_{19} + {}^{3}/_{20} \times {}^{5}/_{19}$ A1 for $^{222}/_{380}$ oe or 0.58(421...) **OR** B1 for $^{8}/_{19}$ or $^{5}/_{19}$ or $^{17}/_{19}$ M1 for $^{12}/_{20} \times {}^{8}/_{19}$ *or* $^{5}/_{20} \times {}^{15}/_{19}$ *or* $^{3}/_{20} \times {}^{17}/_{19}$ M1 for $^{12}/_{20} \times {}^{8}/_{19} + {}^{5}/_{20} \times {}^{15}/_{19} + {}^{3}/_{20} \times {}^{17}/_{19}$ A1 for $^{222}/_{380}$ oe or 0.58(421...) **OR** B1 for $^{11}/_{19}$ or $^{4}/_{19}$ or $^{2}/_{19}$ M1 for $^{12}/_{20} \times {}^{11}/_{19}$ *or* $^{5}/_{20} \times {}^{4}/_{19}$ *or* $^{3}/_{20} \times {}^{2}/_{19}$ M1 for $1 - ({}^{12}/_{20} \times {}^{11}/_{19} + {}^{5}/_{20} \times {}^{4}/_{19} + {}^{3}/_{20} \times {}^{2}/_{19})$ A1 for $^{222}/_{380}$oe or 0.58(421...) **NB** if decimals used they must be correct to at least 2 decimal places
				SC : with replacement B2 for $^{111}/_{200}$ oe **OR** e.g. B0 M1 for $^{12}/_{20} \times {}^{8}/_{20}$ *or* $^{5}/_{20} \times {}^{15}/_{20}$ *or* $^{3}/_{20} \times {}^{17}/_{20}$ M1 for $^{12}/_{20} \times {}^{8}/_{20} + {}^{5}/_{20} \times {}^{15}/_{20} + {}^{3}/_{20} \times {}^{17}/_{20}$ A0

Q18 – No Markscheme

Q19.

Question	Working	Answer	Mark	Notes
(a)		$12x + 20$	1	B1 cao
(b)		$5x + 7$	2	M1 for $2\times x - 2\times 4$ or $3\times x + 3\times 5$ A1 cao
(c)		$x^2 + 10x + 24$	2	B2 cao (B1 for 4 correct terms with or without signs, or 3 out of no more than 4 terms, with correct signs. The terms may be in an expression or in a table)

Q20.

Paper_5MB1H_01				
Question	Working	Answer	Mark	Notes
(a)		0.05	3	M1 for correct method using sum of probabilities = 1 eg $1 - 0.6 - 0.25$ (=0.15) or $0.6 + 0.25 + 2x + x = 1$ M1 (dep) for correct method to use P(blue) = 2 × (Green) Eg "0.15" ÷ 3 A1 cao
(b)		30	2	M1 for 0.6 × 50 oe A1 cao

Q21.

Question	Working	Answer	Mark	Notes
(a)		Correct construction	2	M1 for correct construction arcs or bisector within guidelines but no (or incorrect) construction arcs A1 for bisector within guidelines with correct arcs shown
(b)		Correct construction	2	M1 for correct construction arcs or perpendicular within guidelines but no (or incorrect) construction arcs A1 for perpendicular within guidelines with correct arcs shown

Q22.

Question		Working	Answer	Mark	Notes
		π × 20	62.8 cm	3	M1 π × 20 or π × 19.5 or π × 19.95 A1 62.8 – 63 B1(indep) for units consistent with answer

Q23.

Question		Working	Answer	Mark	Notes
		Angle *ABE* = 40 (vertically opposite angles are equal) Angle *BAE* = angle *BEA* = (180 – 40)/2 = 70 (base angles of an isos triangle are equal) *x* = 70 (alternate angles on parallel lines are equal) OR Angle *ABE* = 40 (vertically opposite angles are equal) Angle *BAE* = angle *BEA* = (180 – 40)/2 = 70 (base angles of an isosceles triangle are equal) Angle *BEF* = 40 (corresponding angles are equal) *x* = 180 – 70 – 40 = 70 (angles as a straight line add up to 180°)	70	5	B1 for angle *ABE* = 40, could be marked on the diagram M1 for (180 – '40')/2 (= 70) A1 for 70° identified as the angle *x*° C2 for fully correct reasons: 'vertically opposite angles are equal' or 'vertically opposite angles are equal' 'base angles of an isosceles triangle are equal' 'alternate angles on parallel lines are equal' (C1 for just one correct reason quoted) OR B1 for angle *ABE* = 40 or angle *BEF* = 40, could be marked on the diagram M1 for (180 – '40')/2 (= 70) A1 for 70° identified as the angle *x*° C2 for fully correct reasons: 'vertically opposite angles are equal' or 'vertically opposite angles are equal' 'base angles of an isosceles triangle are equal' 'corresponding angles on parallel lines are equal' 'angles on a straight line add up to 180' (C1 for just one correct reason quoted)

Q24. Not available