Countdown to your final Maths exam ... part 3 (2019)

Markscheme & Examiners Report

Q1. No Examiner's Report available for this question

Q2. Many candidates did not know how to start this question. A very common incorrect answer here was $^4/_{10}$. A significant number of candidates, having reached the correct fractions with a common denominator, eg $^3/_8 + ^4/_8$, then incorrectly went on to add the numerators and the denominators.

Q3. A good proportion of students achieved the mark for rounding, but it is clear that a large number of students do not understand what rounding to decimal places means. Common errors included rounding or truncating to 2 decimal places and many moved the decimal point rather than rounding at all, or added three zeros to the end.

Q4. In part (a), many students were unable to evaluate $\sqrt[3]{42.875}$ correctly. The common incorrect answers were 19.64 from $3 \times \sqrt{42.875}$, 280.74 from $(\sqrt{42.875})^3$ and 6.547 from $\sqrt{42.875}$. Students were more successful in part (b) and the correct answer was often given with no intermediate working. The most common incorrect answer was 6.41, from keying in $3.4 \times 5.2 \div 2.6 - 0.39$. Some students gained one mark for evaluating either the numerator or the denominator correctly. Some obtained both 17.68 and 2.21 but did not know what to do with these values.

Q5. Full marks in this question were not often achieved and this was usually the result of candidates' inability to find $^1/_3$ of the correct amount, often finding $^1/_3$ of the number of bags once the first 30 had been accounted for. After gaining one mark for $30 \times 5 = 150$, candidates needed to work out the profit still required after the sale of the bags at £5 and £4. Having made the error concerning $^1/_3$ of the number of bags, many candidates were able to successfully attain a follow-through answer but often lost marks due to lack of clarity and an unsystematic approach in an otherwise correct method. Candidates should be encouraged to write down every step, however simple, in a multi-stage calculation.

Many candidates calculated the correct totals for selling the bags but then failed to take this into account and simply divided £75 by their remaining bags.

Q6. There were many correct responses to part (a) but many wrote 0.37, 0.46, 0.401, 0.439 often because they were trying to order 37, 46, 401 and 439 In part (b) many students tried to convert all the numbers to decimals but then struggled to convert $\frac{7}{8}$ to a decimal and often wrote that $\frac{2}{3}$ was 0.6 when written as a decimal.

Q7. No Examiner's Report available for this question

Q8. No Examiner's Report available for this question

Q9. No Examiner's Report available for this question

Q10. No Examiner's Report available for this question

Q11. No Examiner's Report available for this question

Q12. No Examiner's Report available for this question

Q13. No Examiner's Report available for this question

Q14. Part (a) was again a well answered question with a large majority of answers being fully correct. Only a few candidates rounded inappropriately.

Part (b) was not as well done as part (a) however many candidates did succeed in rounding correctly. A popular incorrect answer was 200 000.

Q15. No Examiner's Report available for this question

Q16. Converting the mixed numbers to improper fractions was the most common approach in part (a). This often lead to arithmetic errors where at least one of the fractions with a common denominator was incorrect. The more economical approach of dealing with the whole numbers separately and then writing the fractions with a common denominator usually got the correct answer. However, the most common error was to add the two whole numbers and then simply to add the numerators and denominators of the fractions to give an incorrect answer of $3\frac{2}{11}$.

In part (b), many students simply did not know how to divide by a fraction with just under 75% of students unable to gain any credit in this question. Of those that did, the greatest loss of marks was for not reading the question carefully enough and failing to give the answer as a mixed number in its simplest form; answers of $\frac{8}{5}$ and $1\frac{9}{15}$ were common. Many unsuccessful students were aware they needed to 'flip' but were unclear which fraction this referred to (sight of KFC on scripts was common). Conversion of the first fraction to an improper fraction as a first step was regularly missed out by students.

Q17. Most candidates tried to find 65% of 8420 (often unsuccessfully) and one fifth of 8420 (often successfully). Calculating 65% of 8420 by 'breakdown' methods of finding 10% and 5% often lead to inaccuracies and as working was not clearly shown such as 10% = 8420 ÷ 10 and 5% = their 10% ÷ 2, many marks were lost. Those that wrote 65 ÷ 100 × 8420 tended to be more successful. Only a small percentage of candidates went down the route of adding 65% and 20%. Of those that employed this method most then gave an answer of 15% rather than continuing to find 15% of 8420.

Mark Scheme

Q1.

Paper 1MA1: 3F			
Question	Working	Answer	Notes
	0.43, 0.428..., 0.438. 0.4375	$\frac{3}{7}$, 0.43, $\frac{7}{16}$, 43.8%,	M1 Converts numbers to common format e.g decimals to at least A1 3 d.p.

Q2.

	Working	Answer	Mark	Notes
	⅜ + ½ = ⅜ + $\frac{1\times4}{2\times4}$ OR ⅜ + ½ = $\frac{3\times2}{8\times2}$ + $\frac{1\times8}{2\times8}$	⅞	2	M1 for converting to two fractions with the same denominator and at least one numerator with the correct expression or number A1 for ⅞ oe

Q3.

Question	Working	Answer	Mark	Notes
		7.265	B1	cao

Q4.

Question	Working	Answer	Mark	Notes
(a)		3.5	1	B1 cao
(b)		8	2	B2 cao (B1 for 17.68 or 2.21)

Q5.

Question	Working	Answer	Mark	Notes
	½ × 60 = 30, 30 × 5 = 150 ⅓ × 60 = 20, 20 × 4 = £80 3 × 60 = 180 180 + 75 – 150 – 80 = £25 10 bags (i.e. 60 – 30 – 20) sold for 25 25 ÷ 10 = 2.50 OR ½ × 60 = 30, 30 × £2 = £60 profit ⅓ × 60 = 20, 20 × £1 = £20 profit 60 + 20 = £80 80 – 75 = 5 loss on 10 bags (i.e. 60 – 30 – 20) 10 × £3 = £30 30 – 5 = £25 £25 ÷ 10 = £2.50	2.50	4	M1 for ½ × 60 × 5 (=150) or ⅓ × 60 × 4 (=80) M1 (dep on 1st M1) for 3 × 60 + 75 – '150' – '80' oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5) OR M1 for ½ × 60 × 2 (=60) or ⅓ × 60 × 1 (=20) M1 (dep on 1st M1) for (60 – '30' – '20') × 3 – ('60' + '20'– 75) oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5)

Q6.

Question		Working	Answer	Mark	Notes
	(a)		0.37, 0.401, 0.439, 0.46	1	B1 cao
	(b)	$\frac{1}{4}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{7}{8}$ 0.75, 0.875, 0.25, 0.5, 0.66	$0.25, \frac{1}{2}, \frac{2}{3}, 75\%, \frac{7}{8}$	2	M1 for attempt to convert all to same form or one error in ordered listing A1 for correct order (Accept 0.67 or 0.66 for $\frac{2}{3}$) (SC: B1 for order reversed)

Q7.

Paper 1MA1: 1F					
Question		Working	Answer		Notes
	(a)		$\frac{17}{35}$	M1 A1	for common denominators with at least one numerator correct
	(b)		$\frac{20}{9}$	M1 A1	for $\frac{5}{3} \times \frac{4}{3}$ or $\frac{20}{12} \div \frac{9}{12}$

Q8.

Answer	Mark	Notes
2550	B1	cao

Q9.

A1:3F		
Working	Answer	Notes
$3.69 \times 2 = 7.38$	19	P1 for 7.38 repeatedly added at least 6 times OR $50 \div 7.38$ P1 for $6 \times 7.38 + 3.69$ A1 19 boxes

Q10.

Answer	Mark	Notes
35	P1	for start to process, e.g. $40 \div 4 \times 3$ ($=30$) or $120 \div 40$ ($=3$)
	P1	(dep P1) for $(40 - "30") \div 2$ ($=5$) or "30" $\times 4.5$ ($=135$) or "30" $\times (4.5-3)$
	P1	(dep P2) for process to find income, e.g. "30" $\times 4.5$ ($=135$) and "5" $\times 4$ ($=20$)
	P1	for a complete process leading to profit, e.g. "135"+"20"−120
	A1	cao

Q11.

Question	Working	Answer	Mark	Notes
		$\dfrac{23}{30}$	3	M1 for conversion to improper fractions, e.g. $\left(\dfrac{13}{5}-\dfrac{11}{6}\right)$ or for $\left(\dfrac{18}{30}-\dfrac{25}{30}\right)$ M1 for a complete correct method A1 for $\dfrac{23}{30}$ oe

Q12.

Question	Working	Answer	Mark	Notes
		2.18	3	M1 1.643… or 8.143… M1 (= 2.1773…..) B1 2.18 or ft

Q13.

Paper 1MA1:3F			
Question	Working	Answer	Notes
		$12.5 \le L < 13.5$	B1 12.5 B1 13.5

Q14.

Question		Working	Answer	Mark	Notes
	(a)		5600	1	B1 cao
	(b)		198 000	1	B1 cao

Q15.

Question		Working	Answer	Mark	Notes
	(a)		275.400(96709035)	M1	9.952(38664844) or 53.152(38664844)
				A1	275.400(96709035)
	(b)		280	B1	ft provided part (a) is to at least 4 significant figures

Q16.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	$\dfrac{95}{28}$	M1	for a method to add using common denominators with at least one fraction correct (matching numerator with common denominator) eg $\dfrac{60}{28}+\dfrac{35}{28}$ or $(2)\dfrac{4}{28}+(1)\dfrac{7}{28}$	Use of decimals gets no credit unless it leads to a correct fraction
		A1	$\dfrac{95}{28}$ oe eg $3\dfrac{11}{28}$	
(b)	$1\dfrac{3}{5}$	M1	for $\dfrac{6}{5}\times\dfrac{4}{3}$ or $\dfrac{24}{20}\div\dfrac{15}{20}$ or $\dfrac{8}{5}$ oe eg $1\dfrac{9}{15}$	Use of decimals gets no credit unless it leads to a correct fraction
		A1	cao	

Q17.

PAPER: 5MB3F_01

Question	Working	Answer	Mark	Notes
	65% is 5473 $\dfrac{1}{5}$ is 1684	1263	4	M1 for a correct method to find 65% (= 5473) of the customers M1 for a correct method to find $\dfrac{1}{5}$ (= 1684) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao OR M1 for a correct method of adding 65% and $\dfrac{1}{5}$ when both correctly
	85% is 7157 15% is 1263			written as percentages (= 85%) or decimals (= 0.85) or fractions (= $\dfrac{85}{100}$ oe) M1 ft for a correct method to find the percentage or decimal or fraction of the customers (= 7157) M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao
(cont)				OR M1 for a correct method of adding 65% and $\dfrac{1}{5}$ when both correct percentages (= 85%) or decimals (= 0.85) or fractions (= $\dfrac{85}{100}$ oe) M1 ft for a correct method to find the remaining percentage (= 15%) or decimal (= 0.15) or fraction ($\dfrac{15}{100}$ oe) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao