



COUNTDOWN TO YOUR FINAL MATHS EXAM ... PART 2 (2018)

EXAMINERS REPORT & MARKSCHEME

Mark Scheme

Q1.

Question	Working	Answer	Mark	Notes
		2000	3	B1 for correctly rounding two of the three values (40, 100, 0.2) M1 for partially completing the calculation, e.g. $(40 \times 10) \div 0.2$, $400 \div 0.2$ A1 cao

Q2.

PAPER: 5MB3H 01				
Question	Working	Answer	Mark	Notes
*	$179 \div 70 = 2.5(571\dots)$ $275 \div 100 = 2.7(5)$ $399 \div 150 = 2.6(66\dots)$ $70 \div 179 = 0.39(11\dots)$ $100 \div 275 = 0.36(36\dots)$ $150 \div 399 = 0.37(59\dots)$	70 ml tube with reason	4	Using pence per ml M1 for a correct method of finding the cost per millilitre (or cost/10 ml etc) for one of the sizes M1 for a correct method of finding the cost per millilitre (or cost/10 ml etc. must be consistent) for each of the sizes A1 for 2.5(571\dots) (70 ml) and 2.7(5) (100 ml) and 2.6(66\dots) (150 ml) or equivalent depending upon units used. These values can be rounded or truncated as long as they remain different C1 (dep on M1) for selecting the tube with the best value for money based upon a comparison of their 3 values. OR Using ml per 1p M1 for a correct method of finding the volume per pence (or £) for one of the sizes M1 for a correct method of finding the volume per pence (or £) for each of the sizes, with consistent units A1 for 0.39(11\dots) (70 ml) and 0.36(36\dots) (100 ml) and 0.37(59\dots) (150 ml) or equivalent depending upon units used. These values can be rounded or truncated as long as they remain different C1 (dep on M1) for selecting the tube with the best value for money based upon a comparison of their 3 values.

Q3.

Question	Working	Answer	Mark	Notes																																			
	515 $\underline{35 \times}$ 1575 15450 18025 <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>5</td><td>1</td><td>5</td><td>×</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>3</td></tr> <tr><td>5</td><td>3</td><td>5</td><td>5</td></tr> </table> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>2</td><td>0</td><td>2</td><td>5</td></tr> <tr><td>1</td><td>5</td><td>5</td><td>5</td></tr> <tr><td>8</td><td>0</td><td>2</td><td>5</td></tr> </table> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>500</td><td>10</td><td>5</td></tr> <tr><td>30</td><td>15000</td><td>300</td><td>150</td></tr> <tr><td>5</td><td>2500</td><td>50</td><td>25</td></tr> </table> $15000 + 2500 + 300 + 50 +$ $150 + 25 = 18025$ OR $3307 \times 35 = 115745$ $2792 \times 35 = 97720$ $115745 - 97720$	5	1	5	×	1	0	1	3	5	3	5	5	2	0	2	5	1	5	5	5	8	0	2	5	500	10	5	30	15000	300	150	5	2500	50	25	£180.25	4	M1 for 515×0.35 or 515×35 This may be implied from an incomplete method of multiplication M1 for a complete method with relative place value correct. Condone one multiplication error, addition not necessary Or for a complete grid, condone one multiplication error, addition not necessary Or for sight of a complete partitioning method. Condone one multiplication error final addition not necessary M1 (dep on the previous M1) for addition of appropriate elements of the calculation A1 for £180.25(p) or 18025p (with '£' sign deleted) OR M1 for $3307 \times 0.35 - 2792 \times 0.35$ or $3307 \times 35 - 2792 \times 35$ M1 for a correct method of multiplication of at least one product, using digits 3307 and 35 or 2792 and 35 Condone one multiplication error, addition not necessary M1 (dep on the previous M1) for addition of appropriate elements of the calculation A1 for £180.25 or 18025p (with '£' sign deleted)
5	1	5	×																																				
1	0	1	3																																				
5	3	5	5																																				
2	0	2	5																																				
1	5	5	5																																				
8	0	2	5																																				
500	10	5																																					
30	15000	300	150																																				
5	2500	50	25																																				

Q4.

Question	Working	Answer	Mark	Notes
		5.55	B1	cao

Q5.

Question	Working	Answer	Mark	Notes
	<p>Ticket sales: $16 \times 100 = \text{£}1600$</p> <p>Meals: $12 \times 100 = 1200$</p> <p>Fixed costs: $230 + 150 + 30 = 410$; $410 + 1200 = 1610$ or $1600 - 230 - 150 - 30 = 1190$; $1190 - 1200 = -10$</p> <p>Total $410 + 1200 = \text{£}1610$ (<$\text{£}1600$) OR $\text{£}1610 \div 100 = \text{£}16.10$ ticket price (>$\text{£}16$) OR $\text{£}1600 - 410 - 1200 = -\text{£}10$ (or $\text{£}10$ needed) OR $\text{£}1600 - 1200 = \text{£}400$ (<$\text{£}410$ costs)</p>	<p>No.</p> <p>$\text{£}1610$ >$\text{£}1600$</p> <p>$\text{£}410$ >$\text{£}400$</p>	4	<p>M1 for addition of 230, 150, 30 (or + 410) (=422 or 800) M1 for 12×100 (= 1200) A1 for $\text{£}1610$ total costs or $\text{£}16.10$ ticket price needed. C1 (dep on at least M1) for correct comparison and statement that "$\text{£}1610$">"$\text{£}1600$" and that costs will not be covered. OR M1 for subtraction of 230, 150, 30 (or - 410) M1 for 12×100 (=1200) A1 for $\text{£}400$ left or $-\text{£}10$ C1 (dep on at least M1) for correct comparison and statement that "$\text{£}410$">"$\text{£}400$" and that costs will not be covered.</p>

Q6.

PAPER: IMA0/2H				
Question	Working	Answer	Mark	Notes
*		large carton with correct calculations	3	<p>M1 for $1.60 \div 125$ (= 0.0128) or $2.8 \div 225$ (= 0.0124(4...)) or $125 \div 1.60$ (= 78(.125(g)) or $225 \div 2.80$ (= 80(.35...g)) or any other calculation that could lead to a comparative figure</p> <p>M1 for $1.60 \div 125$ (= 0.0128) and $2.8 \div 225$ (= 0.0124(4...)) or for $125 \div 1.60$ (= 78(.125(g)) and $225 \div 2.80$ (= 80(.35...g)) or for calculations that could lead to comparative figures for the 2 cartons</p> <p>C1 for correct comparative figures for both cartons leading to a correctly stated comparison.</p> <p>Accept any other method considered equivalent. Figures may be truncated or rounded as long as their method is clear.</p>

Q7.

Question	Working	Answer	Mark	Notes
*	65 + 110 = 175 65 + 65 = 130 2 × 28 + 25 + 21	£102	4	M1 for some idea of putting lengths together 65 + 65 oe or 65 + 110 oe seen, or, or finding the total length of wood eg 65 × 5 + 220 (=545) or 7 pieces of wood from which those needed can be cut C1 for a combination of lengths of wood that will allow all lengths to be cut, for example, 2 lengths of 1.8m, 1 length of 1.5m, 1 length of 1m C1 ft for clearly showing a combination of allowed prices for their chosen lengths eg 2 × 28 + 25 + 21 A1 cao

Q8.

Question	Working	Answer	Notes
		$7.15 \leq x < 7.25$	B1 for 7.15 and 7.25 B1 cao

Q9.

Question	Working	Answer	Mark	Notes
*		Comparison leading to £4.32	3	M1 for a method to work out the cost of 36 pencils M1 for a process that leads to a comparison C1 dep on a previous M1 for a clear statement/indication that Oliver spends £4.32 or that it is cheaper to buy the pencils singly with £4.32 seen NB Working can be in pounds or pence

Q10.

Question	Working	Answer	Mark	Notes
		600	3	(M2 for $300 \div 0.5$ or 60×10 or 30×20) M1 for at least two of 30, 10 and 0.5 or sight of 300 or 60 or 20 A1 for 600 – 620 but not 601.1(198428...) OR (M2 for $310 \div 0.5$ or 62×10 or 31×20) M1 for at least two of 31, 10 and 0.5 or sight of 310 or 62 or 20 A1 for 600 – 620 but not 601.1(198428...)

Q11.

5MB1H/01 June 2015												
Question	Working	Answer	Mark	Notes								
*	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">BS</td> <td style="text-align: right;">Bank</td> </tr> <tr> <td style="text-align: right;">I: 2436</td> <td style="text-align: right;">2550</td> </tr> <tr> <td style="text-align: right;">Tot: 42436</td> <td style="text-align: right;">42550</td> </tr> <tr> <td style="text-align: right;">%: 1.0609</td> <td style="text-align: right;">1.06375</td> </tr> </table>	BS	Bank	I: 2436	2550	Tot: 42436	42550	%: 1.0609	1.06375	Correct decision with evidence	4	<p>M1 for $40000 \times \frac{3}{100}$ oe (=1200) or 41200</p> <p>M1 for evidence of a compound interest method</p> <p>eg '41200' $\times \left(\frac{103}{100}\right)$ or $\left(\frac{103}{100}\right)^2 \times 40000$</p> <p>A1 for 2436 or 42436</p> <p>C1 (dep at least M1) for correct decision ft for either Bank or Building Society</p> <p>OR</p> <p>M1 for 1.03</p> <p>M1 for $1.03^2 (= 1.0609)$ and $\frac{2550}{40000}$ oe</p> <p>A1 for 1.0609 and 1.06375</p> <p>C1 (dep at least M1) for correct decision ft for either Bank or Building Society</p>
BS	Bank											
I: 2436	2550											
Tot: 42436	42550											
%: 1.0609	1.06375											

Q12.

5MB2F/01 June 2015				
Question	Working	Answer	Mark	Notes
*	<p>(Cost per paperclip)</p> <p>$40 \div 50 = 0.8$</p> <p>$90 \div 120 = 0.75$</p> <p>OR</p> <p>(Paperclip per penny)</p> <p>$50 \div 40 = 1.25$</p> <p>$120 \div 90 = 1.33(3)$</p> <p>OR e.g. (number of paperclip for £3.60)</p> <p>$9 \times 50 (=450)$</p> <p>$4 \times 120 (=480)$</p>	large with correct figures	3	<p>M1 for $40 \div 50 (= 0.8)$ or $90 \div 120 (= 0.75)$</p> <p>OR $50 \div 40 (=1.25)$ or $120 \div 90 (= 1.33\dots)$</p> <p>OR appropriate calculation that could lead to a comparative figure, e.g. $9 \times 50 (=450)$ or $4 \times 120 (=480)$</p> <p>M1 for method to compare figures for both boxes, e.g. $40 \div 50 (= 0.8)$ and $90 \div 120 (= 0.75)$</p> <p>C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)</p>

Q13.

Paper_5MB1H_01				
Question	Working	Answer	Mark	Notes
	$\frac{11264}{27500} (= 0.4096)$ $0.8^n = 0.4096$	4	2	<p>M1 for $\frac{11264}{27500} (= 0.4096)$ and 0.8^n evaluated for $n = 2$</p> <p>OR</p> <p>attempt to evaluate 27500×0.8^n for at least one value of n (not equal to 1)</p> <p>OR</p> <p>finding at least 2 deductions, ie 2 of 5500, 4400, 3520</p> <p>A1 for 4 cao</p>

Q14.

Question	Working	Answer	Mark	Notes
		7.265	B1	cao

Q15.

PAPER: 5MB1F_01				
Question	Working	Answer	Mark	Notes
*		No from a correct method	5	<p>M1 for method to find cost of room after discount eg $(1 - 0.15) \times 168$ oe (= 142.8)</p> <p>M1 for method to find income or method to find total expenditure eg 48×9.5 (= 456) eg $50+25+15+225+ '142.8'$ (= 457.8)</p> <p>M1 (dep on M2) for complete method to work out if Freya has enough money eg '457.8' and '456' (or 1.8) eg $'457.8' \div 48$ (= 9.53-9.54) eg $'456' - 90 - 225$ (= 141)</p> <p>A1 for correct values for comparison eg 457.8 and 456 eg $9.53 - 9.54$ eg 141 and 142.8</p> <p>C1 (dep on M1) for No or ft their values, with no incorrect statement.</p>

Q16.

Paper 1MA1: 1F			
Question	Working	Answer	Notes
(a)		2000p- 2600p	<p>P1 Evidence of estimate eg. 4 or 50 used in calculation</p> <p>P1 complete process to solve problem</p> <p>A1 2000p-2600p or £20-£26</p>
(b)		under	C1 underestimate as values have been rounded down

Examiner's Report

Q1. No Examiner's Report available for this question

Q2. Candidates' solutions to this question were generally very good indeed. A variety of approaches were employed usually leading to three results which could be compared. The wrong size of tube was often selected however dependent upon the method chosen. Many candidates had not established whether they were finding ml/p or p/ml and so often made the wrong conclusion. For example, with answers of 39.10..ml/£ (70ml), 36.36..ml/£ (100ml) and 37.59..ml/£ (150ml), the 100ml tube was selected with 36.36...being the lowest value.

Q3. Many candidates failed to score full marks simply for not writing their answer in correct monetary notation. Methods of long multiplication were very varied. They were mostly applied correctly only to be spoiled by simple multiplication or addition errors. A significant number of candidates misunderstood the actual bill and read it as 2792 units used in Jan, 3307 units used in April and 515 units used in, usually, May. Credit was still given here for methods of long multiplication applied correctly.

Q4. No Examiner's Report available for this question

Q5. It was encouraging to see many attempts at this question, which usually started with the addition of three of the costs. Misreading of the question resulted in many adding in the food cost as a single item, without multiplying out to give 1200 first. As a result 1600 was usually compared with 422 rather than 1600 with 1612. This final mark was a QWC mark for written communication: candidates had to compare their two figures and come to a stated conclusion. Those who did so with clarity gained the mark, even if the two figures they were comparing were wrong, though the two figures needed to be clearly stated. Figures merely given without a comparative statement failed to gain the mark. The most significant weakness in this question was the inability of many candidates to multiply by 100 efficiently. Many times were grid methods seen, or long lists of repeated addition, both of these usually with errors.

Q6. There are several ways to approach answering this QWC question and students are expected to make it clear what they are doing. The most commonly seen approaches were to either calculate the cost per gram for both cartons or to calculate how many grams could be bought for £1. Many students earned two marks for using one of these approaches. Another approach was to find a common multiple of either the weights (or the prices) and use the factors to calculate the costs (or weights) to enable a comparison. Although this method was less common it was often successful. To earn the final mark for the conclusion it was necessary for students to make a clear statement of which carton was the better value. Circling or ticking the diagram or calculation was insufficient. Those who calculated the cost per gram usually chose correctly and were awarded the mark as long as their calculations were correct. However, those who calculated how many grams could be bought for £1 often misunderstood the units of their found values, assuming they were 78p and 80p, and chose the smaller carton.

Q7. The star on the question numbers means this is a question in which we are assessing the Quality of Written Communication (QWC). Not only did candidates need to show their working, but without an answer line they also needed to make clear their answer. It was surprising to find how few candidates were unable to produce a sequence of calculations leading to an amount. Very rarely did a candidate consider putting the pieces of wood together, for example buying a 150 cm length for two 65 cm pieces, rather than two 110 cm, thereby saving money. Rather the common approach was to go for one length selected from the table for each piece required, usually five 100 cm lengths and two 150 cm lengths though it was not uncommon to find seven 180 cm lengths being bought. A minority concentrated on the lengths rather than finding prices. This was a question in which poor arithmetic let many candidates down. The space on the page was fully utilised by many, but candidates need to be aware that examiners are more likely to award method marks when they can identify logical working that is well organised on the page. Disorganised work, or a failure to identify important information in their answer will lose them marks.

Q8. No Examiner's Report available for this question

Q9. It was pleasing that many fully correct solutions were seen. These were often well presented with working out that was easy to follow. Most candidates realised that they needed to compare the cost of buying the pencils singly with the cost of buying them in boxes. This was most commonly done by working out the cost of three boxes and the cost of 36 single pencils. Some candidates did not gain full marks because they failed to include the £ sign with their answer, simply stating that Oliver spent 4.32. Quite a common error was to use only one way to find the cost of 36 pencils and often this was calculating the cost of three boxes.

Q10. Those candidates who attempted to obtain the answer through calculation and not rounding were awarded zero marks. Most candidates used numbers such as 30, 10 or 0.5 and gained a mark through realising that simplified numbers were needed. Having worked out a simplified numerator, many candidates then appeared to be confused as to what to do with their 0.5, many multiplying by 0.5 or dividing by 2 to get 150. It was unusual to see candidates stating that they wanted to calculate $300 \div 50$; they more usually gave an incorrect answer arising from these two numbers.

Q11. Generally a well answered question with many good concluding statements seen. The majority of candidates demonstrated sound compound interest calculations, with errors mainly seen in the work of those who chose to use multipliers (eg 1.3 rather than 1.03). A few spoilt their solution by using £4000 instead of £40000

Q12. Many students were able to compare accurately the boxes of paper clips to find the better value for money. A significant number of students were able to write down the correct calculations, e.g. $50 \div 40$ and $120 \div 90$ but were then unable to work these out accurately. Other popular approaches include working out how many paperclips could be bought for £3.60 for each type of box and how much it would cost to buy 600 paperclips for each type of box. Some students were not clear about whether they were comparing paperclips per pence or pence per paperclip, often arriving at an incorrect conclusion. A common incorrect approach was to double the values for the small box and conclude that the large box was the better value for money because an extra 20 clips would cost only 10p.

Q13. This question was well answered. Students usually used one of two approaches, either using 0.8 as a multiplier to find the value of the van in successive years or by using the rather more long winded approach of finding the 20% depreciation and subtracting it from the value for each year. The most commonly seen incorrect method was for students to subtract a constant £5500 depreciation each year.

Q14. 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.

Q15. The final question on the paper was well answered with many students scoring all 5 marks, generally for 457.8 and 456 and often with a statement that Fraya was short by £1.80. The most challenging part was in working out 15% of 168 with many just doing $168 - 15 = 153$ and many others finding 15% of the total expenditure.

Q16. No Examiner's Report available for this question