

Q1. Toby invested £4500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much did Toby have in his savings account after 2 years?

£

(Total 3 marks)

Q2. The table shows the costs, per person, of a holiday at two different hotels.
It shows the cost for 5 nights and the cost for each extra night.
It also shows the discount for each child.

Date holiday starts	Park Palace		Dubai Grand	
	5 nights	extra night	5 nights	extra night
01 Jan – 31 Mar	£1169	£150	£849	£86
01 Apr – 09 Apr	£1229	£150	£1219	£95
10 Apr – 15 Jul	£810	£80	£853	£53
16 Jul – 20 Aug	£810	£80	£854	£53
21 Aug – 10 Dec	£810	£80	£869	£94
Discount for each child	$\frac{1}{5}$ off		15% off	

There are two adults and two children in the Smith family.
The family want a holiday for 7 nights, starting on 1st August.

One hotel will be cheaper for them than the other hotel.

Work out the cost of the cheaper holiday.
You must show all your working.

£

(Total 6 marks)

Q3. A shop sells freezers and cookers.

The ratio of the number of freezers sold to the number of cookers sold is 5 : 2.
The shop sells a total of 140 freezers and cookers in one week.

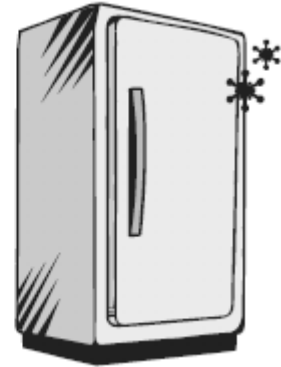
(a) Work out the number of freezers and the number of cookers sold that week.

(3)

Jake buys this freezer in a sale.
The price of the freezer is reduced by 20%.

(b) Work out how much Jake saves.

<p>Freezer</p> <p>Original Price</p> <p>£145</p>
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£

(2)
(Total 5 marks)

Q4.



Ben's Tyre Shop

Mini prices for Tyres

<i>Tyres for Minis</i>	Price
Goodweek	£65
Dunlap	£62
Bridgearth	£75
Pirello	£69
Valves	50p per tyre
Balancing	£1 per tyre

Des buys two Dunlap tyres with valves and balancing and has to pay VAT at 15%.

- (a) Work out the total amount Des pays for the tyres.

£

(3)

Ben sees Dunlap tyres offered for sale in a different garage.
He wants to compare the prices before VAT was added.

- (b) What is the price of these tyres before VAT was added?

Tyre Sale

**Dunlap tyres for Minis (including
valves and balancing)**

£71.30
including VAT at 15%

£

(2)

In 2010 the VAT rate is to be increased from 15% to 17½%.

- (c) By what number will Ben have to multiply the old prices by to give the new prices including VAT?

£

(2)

(Total 7 marks)

- Q5.** Kylie wants to invest £20 000 for 3 years.
She considers two investments, Investment A and Investment B.

Investment A	Investment B
£20 000	£20 000
Earns 3.02% interest per annum	Earns 2.98% compound interest per annum
Interest paid yearly by cheque	

Kylie wants to get the greatest return on her investment.

Which of these investments should she choose?

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(Total 6 marks)

Q6. The value of a car depreciates by 35% each year.

At the end of 2007 the value of the car was £5460

Work out the value of the car at the end of 2006

£

(Total 3 marks)

Q7. Toby invested £4500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

(a) How much did Toby have in his savings account after 2 years?

£

(3)

Jaspir invested £2400 for n years in a savings account.
He was paid 7.5% per annum compound interest.

At the end of the n years he had £3445.51 in the savings account.

(b) Work out the value of n .

.....

(2)
(Total 5 marks)

M1.

Working	Answer	Mark	Additional Guidance
4500×1.04^2	4867.20	3	<p>M1 for 4500×1.04 or for $4500 + 0.04 \times 4500$ or for 4680 or 180 or 360 or 4860</p> <p>M1 (dep) '4680' $\times 1.04$ or for '4680' + $0.04 \times$ '4680'</p> <p>A1 for 4867.2(0) cao (If correct answer seen then ignore any extra years)</p> <p>Alternative method</p> <p>M2 for 4500×1.04^2 or 4500×1.04^3</p> <p>A1 for 4867.2(0) cao [SC: 367.2(0) seen B2]</p>
			Total for Question: 3 marks

M2.

Working	Answer	Mark	Additional Guidance
<p>Park Palace:</p> <p>$810 + 80 + 80 = \text{£}970$ per adult $1/5$ of 970 = 194 $970 - 194 = \text{£}776$ per child $970 + 970 + 776 + 776 = \text{£}3492$</p> <p>Dubai Grand:</p> <p>$854 + 53 + 53 = \text{£}960$ per adult $10\% + 5\%$ of 960 = $96 + 48$ = 144 $960 - 144 = \text{£}816$ per child $960 + 960 + 816 + 816 = \text{£}3552$</p>	Park Palace £3492	6	<p>M1 for identifying correct week for holiday (eg use of 854 for DG, eg circle correct row)</p> <p>M1 for using 7 nights for at least one hotel</p> <p>M2 for complete correct method for reduction of $1/5$ and 15% for at least 5 nights (M1 for correct method to get $1/5$ or 15% or $4/5$ or 85% of a total for at least 5 nights)</p> <p>A1 for one correct total (3492 or 3552)</p> <p>A1 for 34 92 and 3552, with Park</p>

		Palace (or 3492) indicated as the best choice.
Total for Question: 6 marks		

M3.

	Working	Answer	Mark	Additional Guidance
(a)	$140 \times 5 \div 7$ $140 \times 2 \div 7$	100 4	3	M1 for $140 \times 5 \div 7$ or $140 \times 2 \div 7$ or $140 \div ("2 + 5") \times 2$ or $140 \div ("2 + 5") \times 5$ A1 for 100 and 40 cao C1 for linking "cooker(s)" and "freezer(s)" correctly to final answers.
(b)	$145 \times \frac{20}{100}$	29	2	M1 for 145×0.2 or $145 \times \frac{20}{100}$ or 14.5×2 or

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Total for Question: 5 marks

M4.

		Working	Answer	Mark	Additional Guidance
FE	(a)	$2 \times (62 + 0.50 + 1)$ "127" \times 1.15	£146.05	3	M2 for attempt to find cost including VAT e.g. "127" \times 1.15 (M1 for VAT = "127" \times 0.175 or

	(b)	$71.30 \div 1.15$	£62	2	M1 for $71.30 \div 1.15$ or $71.30 \div 115 \times 100$ A1 cao
	(c)		1.02(173913)	2	M1 for $\div 1.15$ or $\times 1.175$ A1 for 1.02(173913)
Total for Question: 7 marks					

M5.

	Working	Answer	Mark	Additional Guidance
QWC (ii, iii)	$3.02/100 \times 20000 \times 3$	(£)1812	6	M1 for a complete process, e.g. $3.02/100 \times 20000 \times 3$ or $1.0302 \times 20000 \times 3$ A1 for 1812 or 21812
FE	$20000 \times (1.0298)^3$	(£)1841.81		M2 for a complete process, e.g. $(1.0298)^3 \times 20000$ (M1 for 1.0298×20000 oe or 20596 seen) A1 for 1841.81 or 21841.81 seen
		Investment B		C1 for selecting the greater of '1812' and '1841.81' or '21812' and '21841.81' QWC: Decision must be stated with all calculations attributable
Total for Question: 6 marks				

M6.

Working	Answer	Mark	Additional Guidance
65% of orig value = £5460 $1\% \text{ of orig value} = \frac{£5460}{65}$ $\text{Orig value} = \frac{£5460}{65} \times 100$	£8400	3	M1 65% (of orig value) = £5460 or (100% – 35%) × orig price = 5460 or 0.65 or 65% seen $\frac{£5460}{65} \times 100$ or $\frac{5460}{0.65}$ M1 A1 £8400
Total for Question: 3 marks			

M7.

	Working	Answer	Mark	Additional Guidance
(a)	4500×1.04^2	4867.20	3	M1 for 4500×1.04 or for $4500 + 0.04 \times 4500$ or for 4680 or 180 or 360 or 4860 M1 (dep) '4680' × 1.04 or for '4680' + 0.04 × '4680' A1 for 4867.2(0) cao (If correct answer seen then ignore any extra years) Alternative method M2 for 4500×1.04^2 or 4500×1.04^3 A1 for 4867.2(0) cao [SC: 367.2(0) seen B2]
(b)	2400×1.075^n 2580 2773.5 2981.5125 3205.12... 3445.51...	5	2	M1 for an attempt to evaluate 2400×1.075^n for at least one value of n (not equal to 1) or $3445.51 \div 1.075^n$ ($n \geq 2$) $\frac{3445.51}{2400}$ (= 1.4356...) and 1.075 evaluated, $n \geq 2$ A1 for 5 cao
Total for Question: 5 marks				

- E1.** There were 2 successful approaches evident in this question. One was the year by year method where the candidate finds 4% of the principal and adds it on to £4500 for the value of the investment (£4680) at the end of the first year. For the second year, 4% of this value is added on to £4680 to get the value of the investment at the end of the second year. This was the approach of many candidates. Also seen was the more direct use of the multiplier 1.04^2 to get the answer in one line.

Candidates who doubled the first year's interest and added it on to get £4860 got 1 mark. Many candidates wrote the final answer as £4867.2 instead of the correct £4867.20.

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Nearly all candidates were able to access this question by scoring at least one mark. However, the element of functionality proved very difficult for many candidates with very few fully correct answers seen with just under 10% scoring all 6 marks and just over 7% scoring 5 marks. Although many had a basic idea of what to do, there were too many variables that caused them problems. Centres need to be aware that they need to be developing these skills. The vast majority of candidates scored 2 or 3 marks, generally for selecting the correct week, demonstrating they had calculated for 7 nights and either finding 20% discount for Park Palace or 15% discount for Dubai Grand.

Unfortunately there were many poorly presented solutions with scribbles all over the two pages including in the margins. This sometimes made it difficult for examiners to award marks.

Some confusion was caused by the wording "discount for each child". It was quite common to see $2/5$ or 30% calculated – doubling the discount as there were 2 children. Many struggled with the arithmetic with many candidates unable to divide by 5 or add or subtract correctly. Others thought one fifth was 25% or 5%. Where candidates did find the discount, many then failed to subtract this discount from their adult total. Errors also occurred when trying to work out the cost of 2 adults with $810 \times 2 + 80 \times 2$ (instead of 4) frequently seen.

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The first part of the question was often well answered and a pleasing number of candidates were able to score the communication mark. Many responses got at least two marks for the correct method with answers of 100 and 40 and many were able to link the number of freezers and cookers to their working in order to gain the final mark. However

there were some who attempted the question using the 'build-up' method, this rarely led to the correct answer. Common errors were to divide 140 by 5, 2 or both to obtain 28 and 70 as answers. Some candidates even added these to obtain 98 without realising that the total should be 140.

Many candidates gained both marks in part (b) but the answer of 116 was commonly seen indicating that the question had not been read carefully enough. 116 was sometimes from the student finding 80% directly and often from the student finding 20% and subtracting £29 from £145. Dividing £145 by 20 and £145-20 unfortunately appeared quite often.

Finding 20% by 10% + 10% was sometimes successful but finding 80% by building up was usually unsuccessful.

E6. This was generally poorly done with the correct answer given by only 13% of candidates. Most methods involved adding or subtracting 35% of £5460. Some candidates showed 65% or 0.65 but then went on to use it incorrectly.

E7. In part (a) there was the expected mix of results between those calculating compound and simple interest. Most people were able to pick up at least one mark for 180, 4860 or 4680. Many opted for correct methods other than the efficient multiplying by 1.04 or 1.04^2 , eg by finding 4% and then adding to find the principal amount for the calculation for the next year. There was a significant number of students who seemed to rely on non-calculator techniques, breaking the problem down to 5% and 1% and then 4%. Many of these attempts ended in numerical errors.

In part (b) the best answers used a "trial & improvement" approach using $(1.075)^n$ showing repeated multiplications of 2400 by 1.075 to find the answer and slightly fewer repeatedly divided 3445.51 by 1.075. There were a surprising number of lengthy methods involving multiplication and addition each year - often correct but for premature rounding. Candidates using this method sometimes miscounted the number of repetitions they had done and gave 4 or 6 as the answer. The two main errors were dividing $(3445.51-2400)$ by £180 or subtracting 7.5% of 3445.51 and working backwards. This question was surprisingly well done even to the extent that a few candidates were able to use logs to solve $1.075^n = 1.4356$.