Welcome to your Core Maths Summer Task!

This Summer Task is designed to consolidate your GCSE Maths knowledge in the topic areas which form a foundation to the Level 3 Core Maths course. It is therefore crucial that you have completed and fully understand everything from the summer task by September.

The Summer Task is to work through a Financial Calculations paper, which starts on the next page. In Core Maths exams, you will receive a Data Sheet, known as Preliminary Material, prior to the exam for you to analyse and annotate as you wish to prepare you for the exam. On the day of the exam you will be handed a clean copy to refer to when answering questions.

For this task, you must read through the Preliminary Material first, then attempt all the questions on the past paper. The mark scheme is attached after the exam paper, you must clearly mark all your work and do corrections in a different colour pen. At the end of the document, I have also attached link to videos for worked solutions if you are struggling to understand the mark scheme. You must be able to fully understand how to answer every question in the paper. The documents consists of the following:

- Page 2 – 5 → Preliminary Material
- Page 6 – 17 → Exam Paper
- Page 18 – 24 → Mark Scheme
- Page 25 →Link to Videos of worked solutions

It is essential for you to keep a record of your completed work, with corrections, as you will be asked to hand it over to your Core Maths teacher on the first week you're back at school, in September.

FINANCIAL CALCULATIONS

Preliminary Material Data Sheet

Jeans

Arthur is an entrepreneur. He buys lots of pairs of jeans and then sells them to make a profit.

Spanish holiday

Jack and Lorna are on holiday in Ibiza for 10 nights. They are staying in a hotel on 'Bed and Breakfast' rates.

Books

A book shop advertises offers on books and packs of books. Some of the packs of books are shown below.

Pack	Number of books in pack
Mr. Men & Little Miss All New Story Collection	35
Diary of a Wimpy Kid Collection	7
Alice Thomas Ellis Set	3
The Top Gear Guide To Britain	1

Sway Credit Finance

Sway Credit Finance is a company which offers small loans to customers. The table below shows the monthly repayments for loans of different amounts over different repayment periods.

Loan amount	Repayment period			
	12 months	24 months	36 months	48 months
£2500	£233.09	£127.92	£92.87	£77.02
£3000	£279.56	£153.58	£111.42	£90.78
£3500	£326.23	£179.09	£129.87	£104.54
£4000	£372.62	£204.73	£148.41	£120.92
£4500	£419.17	£230.31	£166.95	£136.02

Taxation 2015–2016

Value Added Tax [VAT]

The standard rate is 20%

The rate for fuel is 5%

Income Tax

How your tax is calculated.

Find your taxable income by subtracting your tax-free allowance from your annual income.

You pay income tax at 20% on the first £31 785 of your taxable income.

You pay income tax at 40% on your taxable income above £31 785 but below £150 000

National Insurance

Rates of National Insurance are:

0% on income up to £155 per week or up to £672 per month

12% on income between £155 and £815 per week or between £672 and £3532 per month

2% on income over £815 per week or over £3532 per month.

If an employee has entered an occupational pension scheme, the employee may 'contract out' and pay National Insurance contributions at a lower rate. In this case, the employee will receive, from the state, only the basic state retirement pension.

END OF DATA SHEET

Section A

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Jeans** *on page 2 of the Data Sheet.*

1 Arthur buys 510 pairs of jeans for £5600

He sells $\frac{2}{3}$ of the pairs of jeans at £24 a pair.

Arthur then reduces the price to £15 a pair.
He sells 80 pairs at this reduced price.
A market trader buys the rest of the pairs of jeans from Arthur for £500

1 (a) How much does Arthur receive in total?

[5 marks]

Answer £ _____

1 (b) Find the percentage profit which Arthur makes.

[3 marks]

Answer _____ %

8

Section B

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Spanish holiday** *on page 2 of the Data Sheet.*

2 (a) One evening, Jack and Lorna go out for dinner.
The price of their dinner is €32 **each**.
A service charge of 15% is added to the price.

Work out the **total** cost of the dinner for the couple.

[3 marks]

Answer €_____

2 (b) On another evening, they pay a total of €84 for their dinner.
This includes a service charge of 12%

How much is the service charge?

[3 marks]

Answer €_____

2 (c) Jack and Lorna pay a total of €180 for a coach tour to see the local area.
The exchange rate is €1.28 to £1

How much is €180 in pounds?

[3 marks]

Answer £_____

9

Turn over for the next question

Section C

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Books** *on page 2 of the Data Sheet.*

3 (a)

	A	B	C	D
1	**Pack**	**Recommended retail price (£)**	**Sale price (£)**	**Sale price as a percentage of recommended retail price**
2	Mr. Men & Little Miss All New Story Collection	104	25	
3	Diary of a Wimpy Kid Collection	47.99	8.99	
4	Alice Thomas Ellis Set	22.99	4.99	
5	The Top Gear Guide To Britain	14.99	3.99	

Complete column D of the spreadsheet.
Give the percentages to the nearest integer.

[4 marks]

3 (b) Nga buys three sports books.
Each book costs £12, correct to the nearest pound.

What is the maximum possible total price that Nga pays for the three books?

[2 marks]

Answer _____

3 (c) On one day, the book shop sold 26 calendars.
This was $\frac{2}{7}$ of the total stock of calendars in the shop at the start of the day.

How many calendars were in stock at the start of the day?

[3 marks]

Answer _____

9

Turn over for the next question

Section D

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Sway Credit Finance** *on page 3 of the Data Sheet.*

4 Liu wants to borrow £4000 to buy a car. She decides to repay the loan over 24 months.

4 (a) What monthly repayment will Liu make?
Circle your answer.

£372.62 £204.73 £179.09 £166.67

[1 mark]

4 (b) By finding the total repayments that Liu will make to repay the loan, calculate the total interest that she will be charged for borrowing this money.

[3 marks]

Answer _____

4 (c) Express the total interest that Liu will be charged for borrowing this money as a percentage of the amount borrowed.

[2 marks]

Answer _____

6

Section E

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Taxation 2015–2016** *on page 4 of the Data Sheet.*

5 In the tax year 2015–2016, Molly had a tax-free allowance of £10 600 and earned £4629 per month.

5 (a) Calculate Molly's taxable income.

[3 marks]

Answer _____

5 (b) Calculate the total amount of income tax which Molly paid in the year.

[5 marks]

Answer _____

8

6 In the tax year 2015–2016, Dmitry earned £397 per week.
Dmitry was not contracted out for National Insurance contributions.

Calculate the amount which Dmitry paid per week in National Insurance contributions.
[4 marks]

Answer _____

4

Section F

Answer **all** questions.

Answer each question in the space provided for that question.

7 A shopkeeper normally sells ladies' dresses at a price which includes a mark-up of 65% for profit. In a sale, the shopkeeper reduces all her prices by $\frac{1}{3}$

What is the percentage profit the shopkeeper makes when a dress is sold in the sale?

[3 marks]

Answer _____

3

8 A savings account pays interest at a fixed rate of 0.26% per month.

After n years, the amount of money, £P, in the account from an investment of £S is given by

$$P = S \times 1.0026^{12n}$$

Ethan invests £4500 for 1 year.

Use the formula to calculate the total amount of money which Ethan will have at the end of the year.

[3 marks]

Answer _____

3

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Mark Scheme

Key to mark scheme abbreviations

M	mark is for method
m or dM	mark is dependent on one or more M marks and is for method
A	mark is dependent on M or m marks and is for accuracy
B	mark is independent of M or m marks and is for method and accuracy
E	mark is for explanation
√or ft or F	follow through from previous incorrect result
CAO	correct answer only
CSO	correct solution only
AWFW	anything which falls within
AWRT	anything which rounds to
ACF	any correct form
AG	answer given
SC	special case
oe	or equivalent
A2,1	2 or 1 (or 0) accuracy marks
–*x* EE	deduct *x* marks for each error
NMS	no method shown
PI	possibly implied
SCA	substantially correct approach
c	candidate
sf	significant figure(s)
dp	decimal place(s)

No Method Shown

Where the question specifically requires a particular method to be used, we must usually see evidence of use of this method for any marks to be awarded.

Where the answer can be reasonably obtained without showing working and it is very unlikely that the correct answer can be obtained by using an incorrect method, we must award **full marks**. However, the obvious penalty to candidates showing no working is that incorrect answers, however close, earn **no marks**.

Where a question asks the candidate to state or write down a result, no method need be shown for full marks.

Where the permitted calculator has functions which reasonably allow the solution of the question directly, the correct answer without working earns **full marks**, unless it is given to less than the degree of accuracy accepted in the mark scheme, when it gains **no marks**.

Otherwise we require evidence of a correct method for any marks to be awarded.

Question	Solution	Mark	Total	Comment
1(a)	Number of pairs sold at £24 is $\frac{2}{3} \times 510$		5	
	= 340	**B1**		
	Money from selling these is 340 × £24			
	= £8160	**M1**		Their 340 × 24
	Reduced price jeans is 80 × £15 = £1200	**B1**		
	Total raised is £8160 + 1200 + 500	**M1**		M1 for 3 items, 500 and one other correct
	= £9860	**A1**		CAO
1(b)	Profit is £4260	**B1ft**	3	from a [their a – 5600]
	Percentage profit is $\frac{4260}{5600} \times 100$	**M1**		$\frac{their\ 4260}{5600} \times 100$
	= 76.07..	**A1ft**		
	= 76.1%			76% not accepted for final A mark unless 76.07... or 76.1 seen
	Total		**8**	

Question	Solution	Mark	Total	Comment
2(a)	Cost for both is €64	B1	3	
	Service charge is $\frac{15}{100} \times €64$	M1		M1 $\frac{15}{100} \times €32$ or €4.80 Needs doubling for B1 €36.80 is M1 B0 A1
	= €9.60			
	Total cost is €73.60	A1		€73.6 is accepted M1A1 36.80
2(b)	€84 is 112% of cost of dinner	B1	3	Only if used correctly
	Service charge is $€\frac{84}{112} \times 12$	M1		or for $€\frac{84}{1.12} = 75$
	= €9	A1		CAO If for one person £4.50 SC2
2(c)	Cost is $£\frac{180}{1.28}$	M1	3	
	= £140.625	A1		
	= £140.62 or £140.63	A1		NB $\frac{1}{1.28} = 0.78125$ 0.78125 ×180 = 140.625 gains full marks **but** use of this with 0.78×180 gains M1 only
	Total		**9**	

Question	Solution	Mark	Total	Comment
3(a)				

	A	B	C	D
1	**Pack**	**Recommended retail price (£)**	**Sale price (£)**	**Sale price as a percentage of recommended retail price**
2	Mr. Men & Little Miss All New Story Collection	104	25	24
3	Diary of a Wimpy Kid Collection	47.99	8.99	19
4	Alice Thomas Ellis Set	22.99	4.99	22
5	The Top Gear Guide To Britain	14.99	3.99	27

Any percentage	**M1**	4	Any use of $\frac{sale\ or\ discount}{retail} \times 100$ Eg:0.24,0.19,0.22,0,27 gains no marks
Any percentage correct	**A1**		
All correct	**A1**		
All correct and to the nearest integer	**A1**		Percentages are 24.038;18.733;21.705;26.618 These answers are M1,A1,A1;A0
3(b) Maximum price of each book is £12.49	**B1**	2	No mark for just £12.50
Total is £37.47	**B1**		SC1 for £37.50
3(c) 26 is $\frac{2}{7}$ of total stock		3	
13 or $\frac{26}{2}$	**M1**		
13×7	**M1dep**		**Or** M1 for 182 M1 for $\frac{182}{2}$
which is 91	**A1**		
	Total	**9**	

Question	Solution	Mark	Total	Comment
4(a)	£204.73	**B1**	1	
4(b)	Total repayments = £204.73 × 24	**M1**	3	M1 for 24 × their 204.73 [must be one listed]
	= £4913.52	**A1**		
	Interest is £4913.52 – 4000			
	= £913.52	**A1**		CAO
4(c)	Percentage is $\frac{913.52}{4000} \times 100$	**M1ft**	2	Must be 4000
	= 22.838 %	**A1**		ft from b 23 not accepted unless 22.8..seen
	= 22.8 %			
	Total		**6**	

Question	Solution	Mark	Total	Comment
5(a)	Annual income is 12 × £4629		3	Accept working for (a) or (b) in wrong part
	= £55 548	**B1**		
	Taxable income = their £55 548 – 10 600	**M1ft**		Must have been 12 × something
	= £44 948	**A1ft**		
5(b)	Tax at 20% is £31 785 × $\frac{20}{100}$	**M1**	5	
	= £6357	**A1**		
	Amount taxed at 40% is £44 948 – 31 785	**M1**		Their (a) – 31 785
	= £13 163			Implies gained M1
	Tax paid at 40% is £5265.20	**A1**		ft from a
	Tax paid is £11 622.20	**A1**		Full ft from a Do not accept £11 622.2
	Total		**8**	

Question	Solution	Mark	Total	Comment
6	NI is levied on £397 – £155	M1	4	
	= £242	A1		
	NI charged is £242 × $\frac{12}{100}$	M1 Dep on M1		
	= £29.04	A1		Eg £397 × $\frac{12}{100}$ $[47.64]etc$ is no marks
	Total		**4**	

Question	Solution	Mark	Total	Comment
7	Original price is 165% of cost price	B1	3	
	Sale price is $\frac{2}{3}\times$ 165%	M1		
	which is 110%			
	Profit is now 10%	A1		**Or**
				If initial price is [eg] £100 Usual selling price is £165 **B1**
				Price in sale is £165 – £55 **M1**
				= £110
				Profit is 10% **A1**
	Total		**3**	

Question	Solution	Mark	Total	Comment
8	P = £4500 × $1.0026^{12\times1}$	M1	3	M1 is dependent on 12 ×1 not becoming anything other than 12
	= £4500 × 1.03165..	A1		
	= £4642.425…			
	= £4642.42 or £4642.43	A1		
	Total		**3**	
	TOTAL		**50**	

Links to Videos of Worked Solutions

Click on the videos below to access the relevant worked solutions video for the Financial Calculations past paper:-

Question 1a - https://www.youtube.com/watch?v=QiOqwXK1YKY

Question 1b - https://www.youtube.com/watch?v=nmUAhDS0D1g

Question 2a & 2b - https://www.youtube.com/watch?v=nmUAhDS0D1g

Question 2c - https://www.youtube.com/watch?v=z06JU-3Dngo

Question 3a - https://www.youtube.com/watch?v=iDegGaWPHbI

Question 3b & 3c - https://www.youtube.com/watch?v=1sS-l0YJ6Bc

Question 4 - https://www.youtube.com/watch?v=XUY2_8Xv5Xk

Question 5a - https://www.youtube.com/watch?v=zR1Z8ntph9E

Question 5b - https://www.youtube.com/watch?v=lJum3rCmKZ4

Question 6 - https://www.youtube.com/watch?v=z8zA0UzfDkY

Question 7 - https://www.youtube.com/watch?v=4vHEiIrPP4w

Question 8 - https://www.youtube.com/watch?v=zjNdNE0c3ek