Full name: _____

Teacher: _____

Due date: **Thursday 7th March, 2024**

YEAR 9 MATHEMATICS

Investigative Assignment

Term 1 2024

Outcomes Assessed
MAO-WM-01 - develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly. **MA5-FIN-C-01 -** solves financial problems involving simple interest, earning money and spending money.
Content Assessed
In this investigative assignment, students will be assessed on their ability to apply their knowledge, skills and understanding of fractions, decimals and percentages to solve a variety of financial problems. These problems will incorporate the different types of income and include opportunities to explore the PAYG income tax system. The content assessed in this booklet should support the learning activities students are currently studying in class. Please note: You are being assessed on your ability to communicate your thinking and reasoning. **You must show all working out for each question in the space provided. Answer-only responses will not be accepted.**

Weighting	**Due**
20%	This assignment is due to your classroom teacher 2 weeks from the date received (due in Week 6). Due: **Thursday 7th March, 2024**

Penalties as per assessment booklet
Failure to properly attempt or submit the assignment within the negotiated time frame may result in an N-award in Mathematics. If you are unable to submit your assessment task on the due date, an Illness/Misadventure, Consideration of Absence or Application for Extension form must be submitted.

Marking Criteria	
Section 1 – Know your Pay!	/ 28
Section 2 – Shark Tank	/ 10
Total	/38

Section 1 – Know your Pay! 28 Marks

Answer the following problems in the space provided, showing all necessary working.

Please note: answer-only responses will not be accepted.

1. Tyler is a nurse who earns $85 000 p.a. Calculate his fortnightly pay.

1 mark

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2. Penelope is a sales assistant in a clothing store. She earns $22.70 per hour.
   Calculate her yearly pay if she works 38 hours a week.

1 mark

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3. Georgie is a seamstress who creates items of clothing. Every t-shirt she creates costs her $7 in fabric. Once constructed, Georgie then sells her t-shirts for $35 each.

   Calculate Georgie's yearly profit if she sells 25 t-shirts every fortnight.

2 marks

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4. Jeremy is a car salesman. He is paid a retainer of $350 per week and earns a commission of 1.5% of the value of every car that he sells.

   Calculate Jeremy's pay for a week where he sells 3 cars worth a total of $125 000.

1 mark

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5. Stella is working casually at a local take-away store. As a 15-year old, she is entitled to the Australian award wage of $12.36 per hour.

   a. Calculate how much Stella would be paid for working for 12 hours in one week.

1 mark

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   b. Calculate how much she would be paid in total for working the shifts outlined in the table below where she was paid time-and-a-half on Saturdays and double time on Sundays.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
9am – 5pm	NIL	10am – 2pm	NIL	NIL	9am – 5pm	10am – 2pm

3 marks

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6. Your older cousin (P. Pythagoras) has left school and is working full-time and has shown you their payment summary.

Kuger Incorporated

Employee ID: 75403A
Name: P. Pythagoras — Pay Period: **21/2/2024**

Pay Method: EFT
Bank account name: P. Pythagoras
Bank: Mathsville Credit Union
BSB: 102–196 Account No: 00754031

Gross pay for this period:

Amount	Days	Payment Description	Rate/Frequency
2777.15	14.00	Normal time	$72 454/annum

Before tax deductions:

This pay	Description
170	Salary sacrifice: car pre-tax deduction

Miscellaneous deductions:

This pay	Description
52.90	Health fund
23.10	Union fees
76.00	

This pay	YTD	Description
2607.15	62 571.60	Taxable gross pay
616.00	14 784.00	less income tax
76.00	1 824.00	less miscellaneous deductions
1915.15	45 693.60	

Questions continue on next page

a. Your cousin isn't sure about some of the terminology being used in the payment summary, as well as in their workplace. Using full sentences, write an explanation defining the following words.

3 marks

i. Gross Pay

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ii. YTD

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iii. Superannuation

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b. What is P. Pythagoras' gross income for 1 year?

1 mark

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c. Using the fortnightly gross pay of $2 777.15, calculate Pythagoras' hourly rate if he worked 70 hours in this fortnight.

1 mark

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d. Pythagoras' fortnightly pay is consistent throughout the year. By filling in the blank spaces below, calculate the total holiday loading Pythagoras would receive, given that holiday pay is an additional 17.5% on top of 4 weeks pay.

2 marks

4 weeks pay = _____

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17.5% of 4 weeks pay = _____

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Total holiday pay = _____

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e. Superannuation of 11% has already been included in the annual gross pay. Calculate the total amount of superannuation that Pythagoras will earn in a full year.

2 marks

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7. Using the website, https://www.seek.com.au/, or otherwise, you are to research a casual job that you could complete whilst you are still attending school. This job should be paying a wage.

   a. List the information for your chosen job in the space below.

1 mark

Wage = _____ / hour

Hours worked per week = _____

   b. You are planning a holiday up to Queensland which will cost you $3500. Using your answers above, determine how many weeks it will take you to save up for this trip.
   Assume that all money earned can be saved.

2 marks

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8. Tyler's taxable income for this financial year was $85 000.

   a. Use the table below to show that Tyler will need to pay $18 092 in income tax.

Taxable Income	Tax on this Income
0 to $18 200	NIL
$18 201 to $45 000	19c for each $1 over $18 200
$45 001 to $120 000	$5 092 plus 32.5c for each $1 over $45 000
$120 001 to $180 000	$29 467 plus 37c for each $1 over $120 000
Over $180 000	$51 667 plus 45c for each $1 over $180 000

2 marks

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b. The Australian Government has released a new tax table that will commence on July 1, 2024. Using the new tax table below, determine how much less tax Tyler will pay (assume that he continues to have a taxable income of $85 000).
Express your answer as a percentage of Tyler's previous income tax (part a.)

Taxable Income	Tax on this Income
0 to $18 200	NIL
$18 201 to $45 000	16c for each $1 over $18 200
$45 001 to $135 000	$4 288 plus 30c for each $1 over $45 000
$135 001 to $190 000	$31 288 plus 37c for each $1 over $135 000
Over $190 000	$51 638 plus 45c for each $1 over $190 000

3 marks

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9. Joe works as an electrician for an energy company. His normal pay is $32 per hour. Joe is also entitled to an additional 60% of his normal pay when he is called out to fix infrastructure during storms.

   This week, Joe was paid $1305.60 where he worked 28 hours at normal time. It is not known how many hours he worked during storms.

   Determine the total number of hours Joe spent working during storms.

   2 marks

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- End of Section 1 -

Section 2 – Shark Tank **10 Marks**

*** Whilst not necessary, it may help create context by watching an episode of Shark Tank to get an understanding of how the below process works. This can be done by simply typing "Shark Tank" into YouTube.**

Mr Lummis has created a white board that can capture, store and send information that has been written on it to any student who is not present in class.

He currently has two options for where he gets the whiteboards manufactured:

Manufacturer 1	Manufacturer 2
Cost of Materials = $600 Resale Value = $1600	Cost of Materials = $800 Resale Value = $1800

a. Use the formula provided to calculate the percentage profit Mr Lummis will make with each manufacturer. Round your answer to the nearest whole.

$$Percentage\ Profit\ = \frac{Profit}{Cost} \times 100$$

2 marks

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b. Using your calculations in part a, determine which manufacturer Mr Lummis should use to develop his product.

1 mark

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c. Mr Lummis cannot afford to buy the materials on a large scale by himself, so he is looking for a business partner. He presents a proposal to three "sharks" (investors) on the program Shark Tank.

They each review the product and present the following offers to Mr Lummis for his business idea.

- Shark A Offer: Will purchase the entire business off Mr Lummis for $500 000.
- Shark B Offer: Purchase the business for $300 000 and pay Mr Lummis a salary of $2000 per week for the next three years.
- Shark C Offer: Will purchase a 30% share of the business (valued at $500 000). They wish to receive 15% of profits of every item sold.

i. If Mr Lummis was to accept offer B, what would be his total income after the three years? (Make sure to include the sale of the business)

1 mark

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ii. Mr Lummis predicts he will sell 50 whiteboards within his first year of business. If he was to accept the offer of Shark C, how much money would he receive from the sales of the whiteboards? (HINT: calculate the profits on the sales + the sale of the business)

2 marks

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iii. How many whiteboards would need to be sold in order for Shark C's offer to be better than Shark A's?

2 marks

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iv. Using calculations to justify your answer, explain which offer Mr Lummis should accept.

2 marks

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- End of Section 2 -