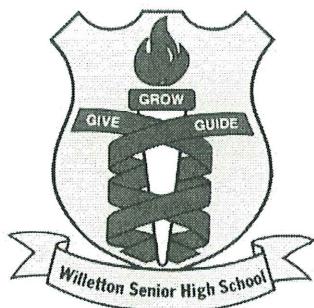


MATHEMATICS APPLICATIONS

YEAR 11 UNIT 1

TEST 1 CONSUMER ARITHMETIC

TERM 1, 2022



SECTION ONE – CALCULATOR FREE

DRAFT 3 - FINAL

TIME: 20 mins
MARKS: 21 marks

SOLUTIONS

STUDENT'S NAME: _____

CIRCLE YOUR

TEACHER'S NAME **Miss Colquhoun** Dr Duan Mr Galbraith

Mr Riemer

Mr Stillitano

- No calculators are allowed during this section of the test.
- Show all necessary working in order to obtain full marks.
- A formula sheet will be provided.

Question 1 (2 marks)

Calculate the following:

- (a) Increase \$305 by 20%

$$\begin{array}{r} 107. \quad \$30.50 \\ 20\% \quad .61.00 \\ \hline 61 + 305 = 120\% \quad \$366 \end{array}$$

(1 mark)

- (b) If a company has 24 courier drivers out of a total staff of 30. What percentage of the staff are courier drivers? (1 mark)

$$\frac{24}{30} \times 100 \rightarrow \frac{4}{5} \times 100 = \underline{\underline{80\%}} \quad \checkmark$$

Question 2 (4 marks)

- (a) Calculate the P/E (the price to earnings ratio) of the company 'Eastpac' that has a share price of \$24.00 and for which the total earnings per share over the previous 12 months has been \$3.00 (1 mark)

$$P/E = \frac{24.00}{3.00} = \frac{24}{3} = 8 \quad \checkmark$$

- (b) An investor is also looking at the company 'Macban' that has a P/E ratio of 6 and for which the total earnings per share over the previous 12 months has been \$1.50, calculate its share price (1 mark)

$$\begin{array}{l} P/E = 6 \quad \rightarrow S.P. = 6 \times 1.50 \\ \frac{S.P.}{1.50} = 6 \quad \rightarrow \underline{\underline{S.P. = \$9.00}} \quad \checkmark \end{array}$$

- (c) Based on the P/E ratio's for Eastpac and Macban, which is the better share to buy? Explain your reasons for your decision. (2 marks)

MACBAN IS THE BETTER SHARE TO BUY AS
IT HAS A LOWER P.E. RATIO. ✓

THIS MEANS MACBAN SHARES WILL TAKE 6 YEARS
TO PAY BACK USING DIVIDENDS, WHILE EASTPAC
WILL TAKE 8 YEARS. ✓

Question 3

(6 marks)

A Mobile phone shop lists all its phone prices with the GST of 10% already included in the shop price. A new model phone is displayed with a price of \$880.

- (a) Determine the pre GST price of the mobile phone.

(2 marks)

$$\frac{110}{100} \times P = 880 \rightarrow P = \frac{880 \times 100}{110} = \$800 \checkmark$$

- (b) If the shop manager decides to discount the shop price of the new model by 20%, as it's not selling fast enough, determine the new sale price.

(2 marks)

$$\frac{880}{100} \times 88 = 8 \times 88 = \$704 \quad \left| \begin{array}{l} \text{OF } 2 \\ \frac{20}{100} \times 880 = 176 \\ 880 - 176 = \$704 \end{array} \right. \checkmark$$

- (c) A customer bought the new model phone at the discounted price and then later sold it to a friend for \$528, what was his percentage profit or loss?

(2 marks)

$$\% \text{ LOSS} = \frac{704 - 528}{704} \times 100 \quad \checkmark$$

$$\frac{176}{704} \times \frac{88}{35-2} = \frac{44}{176} = \frac{22}{88} = \frac{1}{4}$$

Question 4

(4 marks)

A sales person in a store earns a monthly retainer of \$1 800 as well as a 15% commission on the value of his sales.

* In January, his total sales were \$9 000

$$\begin{array}{r} 10\% 900 \\ 5\% 450 \\ 15\% 1350 \end{array}$$

* In February, his total sales were \$14 000

- (a) How much commission did he earn in January?

$$JAN: \frac{15}{100} \times 9000 = \$1350 \quad \checkmark$$

- (b) How much did he earn in total, for the two months of January and February?

(3 marks)

$$JAN: 1800 + 1350 = \$3150 \quad \checkmark$$

$$\begin{array}{r} 10\% 1400 \\ 5\% 700 \\ 15\% 2100 \end{array}$$

$$FEB: 1800 + \frac{15}{100} \times 14000 = 1800 + 2100 \\ = \$3900 \quad \checkmark$$

$$TOTAL = \$7050 \quad \checkmark$$

Question 5**(5 marks)**

An investor bought a house for \$800 000 and sold it one year later to for \$840 000.

- (a) Determine the percentage profit that the investor made. (2 marks)

$$\% \text{ Profit} = \frac{840000 - 800000}{800000} \times 100 \quad \checkmark$$

$$= \frac{40000}{800000} \times 100 = \frac{1}{20} \times 100 = 5\% \quad \checkmark$$

- (b) The real estate agent that sold the house charges a commission of 1.5% of the sale price of \$840 000. Determine the value of the agent's commission. (1 mark)

$$\text{COMM} = \frac{1.5}{100} \times \frac{840000}{840000} = \underline{\underline{12600}} \quad \checkmark$$

- (c) The person that bought the house from the investor is required to pay transfer duty (formerly known as Stamp Duty) on the purchase price of the house. If transfer duty is calculated as \$19 665 plus 5% of the amount the sale exceeds \$500 000 determine the transfer duty payable. (2 marks)

$$T.D = \$19665 + \frac{5}{100} \times (840000 - 500000) \quad \checkmark$$

$$= 19665 + \frac{5}{100} \times \frac{340000}{340000} \times \frac{5}{100} \quad \checkmark$$

$$= 19665 + \$17000$$

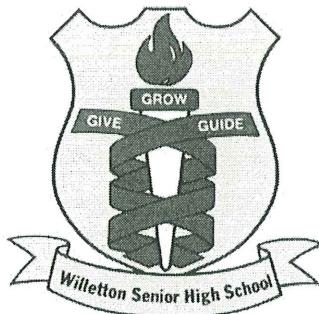
$$\underline{\underline{T.D = \$36665}} \quad \checkmark$$

MATHEMATICS APPLICATIONS

YEAR 11 UNIT 1

TEST 1 CONSUMER ARITHMETIC

TERM 1, 2022



SECTION TWO – CALCULATOR ASSUMED

TIME: 30 mins
MARKS: 24 marks

SOLUTIONS

STUDENT'S NAME: _____

CIRCLE YOUR

TEACHER'S NAME: Miss Colquhoun Dr Duan Mr Galbraith

Mr Riemer

Mr Stillitano

- A scientific calculator and a classpad are allowed.
- 1 x A4 sheet (single sided) of notes is allowed.
- Show all necessary working in order to obtain full marks.
- A formula sheet will be provided.

Question 6**(4 marks)**

With 1 Australian Dollar (1 AUD\$) being equal to 10 252.91 Rp (Indonesian Rupiah) :

- (a) How many Indonesian Rupiah could be bought with AUD\$ 300 ? (1 mark)

$$1 \text{ AUD\$} = 300 \times 10252.91 = 3075873 \text{ Rp } \checkmark$$

- (b) How many AUD\$ could be bought for \$350 000 Rp ? (1 mark)

$$1 \text{ AUD\$} = \frac{350000}{10252.91} = \$34.137 = \$34.14 \text{ AUD\$ } \checkmark$$

- (c) If 1AUD\$ can be exchanged for 82.41 Yen, how many Rp could you get for 30 000 Yen ? Round your answer to the nearest Rp. (2 marks)

$$30000 \text{ Yen} = \frac{30000}{82.41} = \$364.033 \text{ AUD\$ } \checkmark$$

$$\begin{aligned} \text{Rp} &= \$364.033 \text{ AUD} \times 10252.91 \\ &= 3732402.71 \\ &= \underline{\underline{3732403}} \text{ Rp } \checkmark \end{aligned}$$

Question 7 **(4 marks)**

Determine how much interest would need to be paid with each of the following savings accounts.

- (a) \$250 000 invested at 2.5% pa simple interest for 6 years. (2 marks)

$$I = 250000 \times \frac{2.5}{100} \times 6 \checkmark$$

$$\underline{\underline{I = \$37500}} \checkmark$$

- (c) \$250 000 invested at 1.9% pa compounding monthly for 6 years. (2 marks)

$$A = 250000 \left(1 + \frac{0.019}{12}\right)^{6 \times 12} = \$280162.77 \checkmark$$

$$CI = A - P = 280162.77 - 250000$$

$$\underline{\underline{CI = \$30162.77}} \checkmark$$

Question 8

(7 marks)

The table below shows the credits and debits for a bank savings account for the month of March.

Date	Transaction Details	Credit	Debit	Balance
01 March	Opening balance			\$2 500.00
04 March	Coles purchase		\$245.00	\$2 255.00
18 March	Caltex petrol		\$95.00	\$2 160.00
22 March	Cash deposit	\$305.00		A <u>2465</u>

- (a) Determine the value of A (1 mark)

$$A = 2160 + 305 = \$2465 \checkmark$$

- (b) An interest rate of 1.6% per annum is calculated on the minimum monthly balance in the account, show how the interest is calculated for the March statement, given that March has 31 days, and no more transactions were made for the rest of march, other than what is given in the table above. (2 marks)

$$(SI = 2160 \times 0.016 \times \frac{1}{12} = \$2.88 \checkmark)$$

$$SI = 2160 \times 0.016 \times \frac{31}{365} = \$2.94 \checkmark$$

- (c) If the interest of 1.6% per annum was instead calculated on: *the daily balance*, show how the interest would have been calculated for the month of March. (4 marks)

$$SI = 2500 \times 0.016 \times \frac{3}{365} = 0.3288$$

$$SI = 2255 \times 0.016 \times \frac{14}{365} = 1.3839$$

$$SI = 2160 \times 0.016 \times \frac{4}{365} = 0.3787$$

$$SI = 2464 \times 0.016 \times \frac{10}{365} = 1.0801$$

$$\underline{\$3.1715} = \underline{\$3.17V}$$

Question 9

(4 marks)

The table below lists the amount of hours that a staff member 'Kevin Nguyen' has worked during a week at a pizza shop.

Name	Kevin Nguyen	
Normal rate	\$18.50 / hour	
Mon	0 hours	-
Tues	5 hours	$5 \times 18.50 = \$92.50$
Wed	7 hours	$7 \times 18.50 = \$129.50$
Thurs	11 hours	$8 \times 18.50 + 2 \times 1.5 \times 18.50 + 1 \times 2 \times 18.50 = \140.50
Fri	8.5 hours	$8 \times 18.50 + 0.5 \times 1.5 \times 18.50 = \161.875
Sat	4 hours	$4 \times 1.5 \times 18.50 = \111.00
Sun	3.5 hours	$3.5 \times 2 \times 18.50 = \129.50
		<u>$\\$864.875$</u>
		<u>$=\\$864.88$</u>

The following payment rules are used to calculate the wages earned by a staff member :

The first 8 hours worked on any weekday are paid at the normal hourly rate.

If the staff member works more than 8 hours on any one day during the week, then the next two hours are paid at 'time and a half' and any hours after that are to be paid at 'double time'.

Any Saturday hours are to be paid at 'time and a half'

Any Sunday hours are to be paid at 'double time'

Calculate the amount that Kevin earns for working the week as shown above. You may use the table above to show your working, or show your calculations below.

<u>OR NORMAL</u> $5 + 7 + 8 + 8 = 28 \text{ hrs}$ $28 \times 18.50 = \$518.00$	<u>1.5 TIME</u> $2 + 0.5 + 4 = 6.5 \text{ hrs}$ $6.5 \times 1.5 \times 18.50 = \180.375	<u>2x TIME</u> $1 + 3.5 = 4.5 \text{ hrs}$ $4.5 \times 2 \times 18.50 = \166.50
$\text{TOTAL} = \$864.875$ $= \$864.88$		

Question 10**(5 marks)**

The pension for a single person is \$967.50 per fortnight.

The assets test and the income test are applied to a pensioner, and the one that results in the pensioner receiving the lower level of government pension is then applied.

The Assets Test :

Situation	Homeowners	Non Homeowners
Single	\$250 000	\$450 000
Couple (combined Assets)	\$375 000	\$575 000

Assets above the amounts shown will reduce the pension by \$3.00 per fortnight for each \$1000 above the amounts shown above.

The Income Test :

Situation	
Single	\$180.00
Couple	\$320.00

Exceeding the fortnightly income limits will see your income reduce by 50 cents per fortnight for each \$1 earned above the limit shown above.

Calculate the fortnightly age pension for a single homeowner, of pension age with assets of \$480 000 (excluding the family home), of which \$180 000 are deemed to earn 2.25% per annum income. She earns a fortnightly income of \$500 from casual work. The first \$300 of earned income from employment per fortnight does not count for the income test. This is called the work bonus.

$$\begin{aligned}
 \text{ASSET TEST} &= 967.50 - \left(\frac{480\,000 - 250\,000}{1000} \right) \times \$3.00 \\
 &= 967.50 - 230 \times 3 \\
 &= 967.50 - 690 \\
 \underline{\text{ASSET TEST}} &= \$277.50 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \text{INCOME TEST} &= 967.50 - \left(\frac{\text{EARNED} + \text{DEEMED} - 180}{\text{INCOME}} \right) \times \$0.50 \\
 &= 967.50 - \left[(500 - 300) + \frac{180\,000 \times 0.0225}{26} - 180 \right] \times 0.50 \\
 &= 967.50 - \left[200 + \frac{4050}{26} - 180 \right] \times 0.50
 \end{aligned}$$

End of Calculator Assumed Section

$$\begin{aligned}
 \text{INCOME TEST} &= \$879.62 \quad \checkmark \\
 \therefore \text{INCOME TEST APPLIES, PENSION} &= \$277.50 / \text{£} \quad \checkmark
 \end{aligned}$$

