Narrogin Senior High School
Mathematics Department

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Mathematics Applications Unit 1
In-class Investigation ~ Paying Tax

Notes:

- In this assessment, an individual's income is rounded down to whole dollars and the tax owed on taxable income is presented to two decimal places.
- *Taxable income* is the income on which tax is calculated.
- *Tax on the income* is determined by the calculation provided.
- The *tax rate* for an individual is the number of cents per dollar paid in tax e.g., an individual earning $90 000 is on a tax rate of 37c in the dollar. (See table below)
- The financial year starts on 1 July and finishes on 30 June the following year.
- All references to income and amount earned refer to taxable income.

The tax table shows the rules for calculating tax for the 2013-2014 financial year

Taxable income	**Tax on this income**
$1 - $18,200	Nil
$18,201 - $37,000	19c for each $1 over $18,200
$37,001 - $80,000	$3,572 plus 32·5c for each $1 over $37,000
$80,001 - $180,000	$17,547 plus 37c for each $1 over $80,000
$180,001 and over	$54,547 plus 45c for each $1 over $180,000

Some examples of calculating tax are provided.

Example 1: Eva's taxable income for 2013-2014 was $35 000.
Eva's tax = (35 000 - 18 200) x 0·19 = $3192·00

Example 2: Rocky earned over $250 000 and he had to pay tax on $220 000.
Rocky's tax = $54 547 + (220 000 - 180 000) x 0·45 = $72 547·00

Example 3: Mal received an income of $85 000 on which he had to pay tax.
Mal's tax = $17 547 + (85 000 - 80 000) x 0·37 = $19 397·00

** Check these answers using your calculator.

OR

To calculate Mal's tax:

- Locate the correct row of the table (second last row)
- Determine the starting amount ($17 547)
- Calculate the difference between Mal's income and what the taxable income is "**over**" ($85 000 – $80 000= $5000)
- Multiply this difference by the rate (37) and then divide the answer by 100 to convert to dollars. ($5000 x 37 = 185 000c = $1850)
- Add this to the starting amount. ($17 547 + $1850 = $19 397·00)

Question 1 **(13 marks)**

(a) What was the highest income an individual could have and not pay tax? (1)

(b) What was the tax rate for an individual who earned over $180 000? (1)

(c) What incomes were possible for individuals who were on a tax rate of 19c in the dollar? (1)

(d) At what income did the tax rate change from 37c in the dollar to 45c in the dollar? (1)

(e) In 1989-1990, the tax on an income of **$95 000** was calculated as follows. (9)

Tax owed = $16 157 + (**$95 000** - $50 000) x 0·48

(i) Calculate the tax owed.

(ii) How much tax would a person earning $50 000 have had to pay?

(iii) What was the lowest amount of tax that a person earning $50 000 or more had to pay?

(iv) What was the tax rate for incomes over $50 000?

(v) Did individuals on an income of $95 000 in 2013-2014 pay a lower or higher rate of tax than individuals in 1989-1990?

Justify your answer.

(vi) Give the date of the last day in the 1989-1990 financial year for which income would have been included.

Question 2 **(5 marks)**

Using the table for the 2013-2014 financial year, calculate the tax owed on these taxable incomes.

(a) $7569 (1)

(b) $60 000 (2)

(c) $120 000 (2)

Question 3 **(11 marks)**

The percentage tax paid by an individual can be calculated as follows:

Percentage Tax = Tax paid ÷ Taxable income x 100

For example: In 2002 the tax owed on a taxable income of $30 000 was $5379.90

Percentage Tax = $5379·90 ÷ 30 000 x 100 = 17·93%

Calculate the Percentage Tax paid on the following taxable incomes in 2013-2014.
Round answers to 1 decimal place. (1)

(a) $15 000 (1)

(b) $30 000 (3)

(c) $60 000 (3)

(d) $120 000 (3)

Question 4 **(14 marks)**

The Percentage Tax paid by individuals earning various amounts over the years from 2006-2007 to 2012-2013 is shown in the table below.

	Income	$15,000	$30,000	$60,000	$120,000
	2013-2014				
	2012-2013	0·0%	7·5%	18·4%	27·0%
	2011-2012	9·0%	12·0%	19·3%	27·0%
	2010-2011	9·0%	12·0%	19·3%	27·0%
	2009-2010	9·0%	12·0%	19·8%	27·5%
	2008-2009	9·0%	12·0%	20·0%	28·3%
	2007-2008	9·0%	12·0%	21·0%	29·3%
	2006-2007	9·0%	14·5%	22·3%	29·9%

(a) Complete the table by filling in the data from Question 3 for 2013-2014. (1)

(b) Based on the data provided in the table, provide TWO statements summarising the trends in Percentage Tax paid as time passes or as incomes increase. (2)

(c) Fred paid 18·4% tax in 2012-1013 and discovered that his Percentage Tax increased the following year. Explain how this is most likely to have happened. (1)

(d) Explain why the following statement is incorrect. (3)

In 2011-2112, an individual who earned $120 000 paid three times as much tax as a person who earned $15 000.

(e) The table shows the Percentage Tax paid in 2013-2014 by the three people whose calculations are given on the first page and some data for other individuals. (7)

	Taxable income	Tax owed	% Tax
Eva	$35 000	$3192	9·1%
Mal	$85 000	$19 397	22·8%
Rocky	$220 000	$72 547	33·0%
Rick	$25 500	$1387	
Brodie	$56 000		17·4%
Shannon		$23 097	24·3%

(i) Calculate the missing values and add them to the table.

(ii) Is the following statement TRUE or FALSE? Justify your conclusion.

All individuals who earned between $37 001 and $80 000 paid 9.1% in tax.

(iii) Is the following statement TRUE or FALSE? Justify your conclusion.

All individuals earning over $100 000 in 2013-2014 paid the same Percentage Tax.

Question 5 **(6 marks)**

The tables provided show the tax calculations for some of the financial years in recent times.

Taxable income	**Tax on this income in 2013-2014**
1 - $18,200	Nil
$18,201 - $37,000	19c for each $1 over $18,200
$37,001 - $80,000	$3,572 plus 32.5c for each $1 over $37,000
$80,001 - $180,000	$17,547 plus 37c for each $1 over $80,000
$180,001 and over	$54,547 plus 45c for each $1 over $180,000
Taxable income	**Tax on this income in 2010-2011**
1 - $6,000	Nil
$6,001 - $37,000	15c for each $1 over $6,000
$37,001 - $80,000	$4,650 plus 30c for each $1 over $37,000
$80,001 - $180,000	$17,550 plus 37c for each $1 over $80,000
$180,001 and over	$54,550 plus 45c for each $1 over $180,000
Taxable income	**Tax on this income in 2008-2009**
$1-$6,000	Nil
$6,001-$34,000	15c for each $1 over $6,000
$34,001-$80,000	$4,200 plus 30c for each $1 over $34,000
$80,001-$180,000	$18,000 plus 40c for each $1 over $80,000
$180,001 and over	$58,000 plus 45c for each $1 over $180,000

- State whether you AGREE or DISAGREE with the following statements, **and**
- Use data from the tax tables above to JUSTIFY YOUR CONCLUSIONS.

(a) If the tax owed in 2010-2011 was $4650 then the taxable income was $40 000. (2)

(b) Tax paid on $37 100 was higher in 2013-2014 than in 2010-2011. (2)

(c) Tax paid on $200 000 was less in 2013-2014 than in 2008-2009. (2)