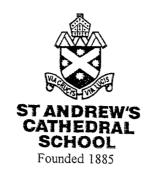
NAME:	

Class:



# **MATHEMATICS**

## Year 9 Stage 5.3 Mathematics

## Semester II 2008

Examination - Part B: Calculator

### Time Allowed:

You have 1 hour and 45 minutes to complete this part of the examination.

### Marking:

Section I: Number

34 Marks

Section II: Measurement

23 Marks

Section III: Algebra

43 Marks

Total: 100 marks

#### Instructions:

Write your name and class on the front page and at the beginning of each section.

Answer all questions in the space provided.

Diagrams are not to scale unless specified.

Note that full marks may not be awarded for insufficient working.

## Year 9 Stage 5.3 Examination

Part B - Calculator

## Section I – Number (34 marks)

1. Write  $\frac{2}{7}$  as a decimal.

[1]

2. Re-write  $2x^{-3}$  without a negative index. [1]

3. Evaluate  $5x^0$ .

[1]

4. Write as a simple ratio  $2\frac{1}{3}:1\frac{1}{2}$ 

[1]

a) Write  $1\frac{1}{4}\%$  as a fraction in simplest form.

[1]

b) A cheetah can run at a speed of 108km/h for short distances. What is this speed in m/s?

[1]

5. The distance from the Earth to the Sun is approximately 152,000,000km. Write this scientific notation.

6. Write 0.008449 correct to 2 significant figures.

|1

7. Circle the irrational numbers.

[1]

$$\pi$$
,  $2.1$ ,  $\sqrt{16}$ ,  $2\sqrt{3}$ 

8. Last year Mr Peabody earned a salary of \$91,500. He also earned \$3000 bank interest on savings. During the year he also paid PAYE tax instalments of \$24,250. He calculates that he has allowable deductions of \$7500.

Taxable income	Tax on this income
\$0 - \$6,000	Nil
\$6,001 – \$30,000	15c for each \$1 over \$6,000
\$30,001 \$75,000	\$3,600 plus 30c for each \$1 over \$30,000
\$75,001 – \$150,000	\$17,100 plus 42c for each \$1 over \$75,000
\$150,001 and over	\$47,100 plus 47c for each \$1 over \$150,000

a) Calculate Mr Peabody's taxable income [1]

b) Calculate the income tax he is required to pay. [2]

c) Mr Peabody also pays Medicare levy of 1.5% of his taxable income. Calculate the Medicare levy payable. [1]

s [1]

## Year 9 Stage 5.3 Examination

Part B - Calculator

d)	Calculate whether Mr Peabody receives a tax
	refund or owes tax and calculate the amount.

[2]

9. Primi earns \$46,384 p.a. She receives holiday loading of  $17\frac{1}{2}\%$  on four weeks pay. What is her total pay for a 4 week European holiday?

[2]

10. Sam normally works a 38-hour week. In a particular week he also works 4 hours at timeand-a-half and 2 hours at double time. If his pay for this week is \$1536, calculate his normal hourly rate.

11. After 10% GST is added, the price of a new car is \$56 100. What was the price of the car before GST was added?

12. Simplify fully

(a)  $2\sqrt{5} - \sqrt{5} + \sqrt{3}$ 

 $\lceil 1 \rceil$ 

b)  $\sqrt{12} + 2\sqrt{27}$ 

[2]

c)  $2\sqrt{3} \times 4\sqrt{6}$ 

[2]

d)  $5\sqrt{10} \div 10\sqrt{5}$ 

[1]

12. Expand and simplify

a)  $(2\sqrt{3} + \sqrt{2})(\sqrt{3} - 3\sqrt{2})$ 

[2]

b)  $(\sqrt{5}+1)^2$ 

[1]

13. Express the following with rational denominators in simplest form.

[1]

[3]

NAME: Shaun Por

Class: 9MAA



## **MATHEMATICS**

## Year 9 Stage 5.3 Mathematics

Semester II 2008

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You have 1 hour and 45 minutes to complete this part of the examination.

Marking:

Section I: Number

34 Marks

Section II: Measurement

23 Marks

Section III: Algebra

43 Marks

Total: 100 marks

#### Instructions:

Write your name and class on the front page and at the beginning of each section.

Answer all questions in the space provided.

Diagrams are not to scale unless specified.

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Year 9 Stage 5.3 Examination

Part B - Calculator

### Section I - Number (34 marks)

1. Write  $\frac{2}{7}$  as a decimal.

[1]

0.286 (3 dec.p1)

2. Re-write  $2x^{-3}$  without a negative index. [1]  $2x^{-3} = 2 \times \frac{1}{\lambda^{3}}$ 

3. Evaluate 5x°. [1]

4. Write as a simple ratio  $2\frac{1}{3}:1\frac{1}{2}$  [1]  $\frac{2\frac{1}{3}:1\frac{1}{2}=\frac{7}{3}:\frac{3}{2}}{=\frac{14}{5}:\frac{9}{6}}$ = 14:9

a) Write  $1\frac{1}{4}\%$  as a fraction in simplest form.

 $\frac{|\frac{1}{4}7_{0}| = \frac{1.25}{100}}{= \frac{1.25}{(0000)}}$   $= \frac{1}{80}$ [1]

b) A cheetah can run at a speed of 108km/h for short distances. What is this speed in m/s?

108 km/hr = 108 000 m/hr = 1800 m/min = 30 m/sec

5. The distance from the Earth to the Sun is approximately 152,000,000km. Write this scientific notation. [1]

1.52×108

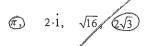
6. Write 0.008449 correct to 2 significant figures. [1]

0.0084 (2 sig.fig)

7. Circle the irrational numbers.

[1]

[1]



 Last year Mr Peabody earned a salary of \$91,500. He also earned \$3000 bank interest on savings. During the year he also paid PAYE tax instalments of \$24,250. He calculates that he has allowable deductions of \$7500.

Taxable income	Tax on this income
\$0 - \$6,000	Nil
\$6,001 - \$30,000	15c for each \$1 over \$6,000
\$30,001 - \$75,000	\$3,600 plus 30c for each \$1 over \$30,000
\$75,001 - \$150,000	\$17,100 plus 42c for each \$1 over \$75,000
\$150,001 and over	\$47,100 plus 47c for each \$1 over \$150,000

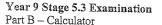
a) Calculate Mr Peabody's taxable income. [1] \$91 500+\$3 000 = \$94500 \$94500 = \$7500 = \$87 000

b) Calculate the income tax he is required to pay.

\$17 100 + (\$0.42 × \$12 000) =\$17 100 +\$5040 =\$22 140

c) Mr Peabody also pays Medicare levy of 1.5% of his taxable income. Calculate the Medicare levy payable.

payable. [1] 0.015 x \$87008 =\$1305



d) Calculate whether Mr Peabody receives a tax refund or owes tax and calculate the amount.

\$24 250 - \$22 140 - \$1305 = \$805

: Mr Peabody receives a tax refund of \$805

9. Primi earns \$46,384 p.a. She receives holiday loading of  $17\frac{1}{2}$ % on four weeks pay. What is her total pay for a 4 week European holiday?

1 week: \$46384 =52 = \$892

4 weeks: \$892 x 4 = \$3568

Holiday loading: 0.175 x \$3568 = \$624.40

Total: \$3568+\$624\_40 = \$4,192.40

10. Sam normally works a 38-hour week. In a particular week he also works 4 hours at time-and-a-half and 2 hours at double time. If his pay for this week is \$1536, calculate his normal hourly rate. [2]

38x+(4x1-5x)+(2x2x)=\$1536

38x+6x+4x=\$1536

- 48x = \$1536 21 = \$1536 = \$32

11. After 10% GST is added, the price of a new car is \$56 100. What was the price of the car before GST was added?

10 x \$56100 = \$51000

12. Simplify fully

- a)  $2\sqrt{5} \sqrt{5} + \sqrt{3}$  [1]
- b)  $\sqrt{12} + 2\sqrt{27}$  [2]  $= 2\sqrt{3} + (2\times3\sqrt{3})$

= 2√3+6√3 = 8√3

- c)  $2\sqrt{3} \times 4\sqrt{6}$  [2]  $= 8\sqrt{18}$   $= 8 \times (2\sqrt{2})$   $= 24\sqrt{2}$ d)  $5\sqrt{10} \div 10\sqrt{5}$   $= \frac{5\sqrt{10}}{10\sqrt{5}}$  $= \frac{1}{2}\sqrt{2}$
- 12. Expand and simplify

a)  $(2\sqrt{3} + \sqrt{2})(\sqrt{3} - 3\sqrt{2})$  [2] =  $\frac{6}{5} - 6\sqrt{6} + \sqrt{6} - 6$ =  $-5\sqrt{6}$ 

b)  $(\sqrt{5}+1)^2$  [1] =  $5+2\sqrt{5}+1$ =  $6+2\sqrt{5}$ =  $2(3+\sqrt{5})$ 

13. Express the following with rational denominators in simplest form.

a)  $\frac{5\sqrt{2}}{\sqrt{7}}$  [1]  $\frac{5\sqrt{2}}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}}$   $\frac{5\sqrt{17}}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}}$ 

b)  $\frac{4\sqrt{2}}{3\sqrt{2} - 2}$   $= \frac{4\sqrt{2}}{3\sqrt{2} - 2} \times \frac{2\sqrt{12} + 2}{3\sqrt{2} + 2}$   $= \frac{24 + 8\sqrt{2}}{18 - 4}$   $= \frac{24 + 8\sqrt{2}}{14}$   $= \frac{24 + 8\sqrt{2}}{14}$   $= \frac{24 + 8\sqrt{2}}{1}$   $= \frac{24 + 8\sqrt{2}}{1}$