

Carlingford High School



Mathematics

Year 9 Term 1 Examination

5.3 Course

2019

Name: _____ Class: _____

Circle your teacher's name: Mrs Wilson/Mrs Young Mrs Lego Mr Wilson

Time allowed: 50 minutes

- Board approved calculators may be used.
- Show all necessary working.
- Marks may be deducted for careless or untidy work.
- Complete the examination in blue or black pen.

Earning Money	Algebraic Techniques	Total
/31	/30	/61

Financial Mathematics (31 marks)	For all calculations, use 1 year = 52 weeks
<p>1. Calvin is paid \$41.50 for each 500 leaflets, or part thereof, he delivers. Calculate his pay for delivering 2300 leaflets.</p> <p>A. \$95 450 B. \$166.00 C. \$190.90 D. \$207.50</p>	<p>4. What amount, to the nearest whole number, must be invested now at 4% per annum, compounded quarterly, so that in five years it will have grown to \$61 000? [3]</p>
<p>2. Which of the following people earns the most?</p> <p>A. Barbara gets \$485 per week. B. Margaret gets \$1010 per fortnight. C. Tina gets \$2130 per month. D. Alice gets \$26 200 per annum.</p>	
<p>3. Gertrude sells internet plans. She is paid a weekly retainer of \$150 and the following rates of commission:</p> <ul style="list-style-type: none"> • 2% of the first \$20 000 worth of sales, • 3.5% of any sales above \$20 000. <p>Calculate how much Gertrude earns in a week in which her sales are \$25 000. [3]</p>	<p>5. Ebony earns \$17.20 per hour at the normal rate. Each week, Ebony works for 11 hours at the normal rate and 4 hours at time-and-a-half.</p> <p>a) What is Ebony's wage each week? [2]</p> <p>b) Ebony wants to increase her weekly wage to \$430 by working extra hours at the normal rate. How many extra hours must she work? [2]</p>

6. Paul is a chemist who earns an annual salary of \$58 762. He is entitled to 4 weeks of annual leave, for which he is paid his normal amount plus $17\frac{1}{2}\%$ annual leave loading.

a) Calculate Paul's salary for a 4-week period. [1]

b) Calculate how much holiday loading Paul will receive for the 4-weeks annual leave. [1]

c) What is Paul's total holiday pay for the 4 weeks period? [1]

7. Ariana is charged compound interest at the rate of 0.036% per day on outstanding credit card balances. She has \$780 outstanding for 24 days.

How much compound interest is she charged?

- A. \$6.74 B. \$6.77
C. \$786.74 D. \$786.77

8. Susan earns a gross pay of \$2290.33 per fortnight. Her deductions are for PAYG tax, \$54.10 for superannuation and \$40.30 for union fees.

a) Use the table below to find Susan's PAYG tax per fortnight. [1]

Fortnightly earnings (\$)	PAYG tax withheld (\$)
2274–2279	450
2280–2285	452
2286–2291	454
2292–2297	456
2298–2303	458
2304–2309	460

b) Calculate Susan's net pay. [1]

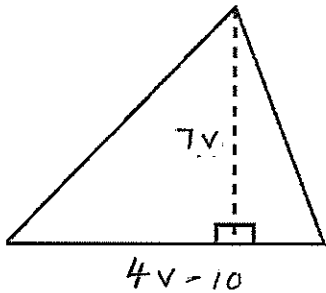
c) Calculate Susan's total deductions as a percentage of her gross income, correct to one decimal place. [2]

<p>9. Alice earns an annual salary of \$55 000 as a hairdresser. She also earns \$5400 from selling handbags. Her allowable tax deductions are union fees of \$700, \$560 for uniforms and superannuation contributions of \$1880. Her employer deducts \$175 per week for tax. Medicare Levy is charged at 2%.</p> <p>a) What is the total of all her allowable deductions. [1]</p> <p>b) What is Alice's taxable income? [1]</p> <p>c) Find the amount of Medicare Levy Alice has to pay. [1]</p>	<p>d) Using the tax table on the bottom of this page, find her tax payable. [2]</p> <p>e) Calculate Alice's total tax due for the financial year. [1]</p> <p>f) Will Alice receive a refund or a debt? Justify your answer with appropriate calculations. [2]</p>
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Taxable income	Tax payable
0 - \$18 200	Nil
\$18 201 - \$37 000	Nil + 19 cents for each \$1 over \$18 200
\$37 001 - \$80 000	\$3572 + 32.5 cents for each \$1 over \$37 000
\$80 001 - \$180 000	\$17 547 + 37 cents for each \$1 over \$80 000
\$180 001 and over	\$54 547 + 45 cents for each \$1 over \$180 000

<p>10. Dominic plans to make an investment of \$200 000 at 9.75% p.a. simple interest for 15 months.</p> <p>a) How much simple interest will Dominic earn? [2]</p> <p>b) How much will Dominic's investment be worth at the end of the term? [1]</p>	<p>Working out</p>
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Algebraic Expressions (30 marks)	
<p>1. $7ab + 2b - 5ab + b$ simplifies to:</p> <p>A. $2ab + 2b^2$ B. $2ab + 3b$ C. $2ab + b$ D. $5ab$</p>	<p>7. Expand and simplify fully the following:</p> <p>a) $3w(7w - 2t)$ [1]</p>
<p>2. $3x^3y \times 2x^5y^3$ is equal to:</p> <p>A. $5x^{15}y^3$ B. $6x^{15}y^3$ C. $6x^8y^4$ D. $5x^8y^4$</p>	<p>b) $-(4m - 9)$ [1]</p>
<p>3. $12a^7 \div 4a^4$ simplifies to:</p> <p>A. $3a^3$ B. $3a^{11}$ C. $8a^3$ D. $8a^{11}$</p>	<p>c) $2(3x + 3) - 4(x + 5)$ [2]</p>
<p>4. Simplify $\frac{6a^7b^3}{3a^2b^8}$</p> <p>A. $\frac{2a^5}{b^5}$ B. $\frac{b^5}{2a^3}$ C. $\frac{2a^3}{b^5}$ D. $\frac{a^5}{2b^3}$</p>	<p>d) $(2r + 7)^2$ [2]</p>
<p>5. $(x - 4)(x + 5)$ expands to:</p> <p>A. $x^2 + x - 20$ B. $x^2 + x - 9$ C. $x^2 - 9x - 20$ D. $x^2 + 9x + 20$</p>	<p>e) $4 - (x - 3)(x + 2)$ [2]</p>
<p>6. Simplify each expression fully:</p> <p>a) $3mn \times 2m \times -10$ [1]</p> <p>b) $45a^2b^2c^2 \div 5abc \div 3$ [2]</p>	<p>f) $(\frac{2}{y} - y)^2$ [2]</p>

<p>8. Simplify fully the following:</p> <p>a) $\frac{5t}{8} - \frac{3t}{5}$ [2]</p> <p>c) $\frac{3c}{4d} \div \frac{12c}{10d} \times \frac{d^2}{5c^3}$ [2]</p>	<p>10. Find, in simplest form, an expression for the area of the triangle below. [2]</p> 
<p>9. Factorise each expression completely:</p> <p>a) $8xy - 24y$ [1]</p> <p>b) $-15m - 45m^2 - 5m^3$ [1]</p> <p>c) $m(3n + p) - r(3n + p)$ [1]</p>	<p>*11. Expand and simplify completely: [3]</p> <p>$(y - 2)(3y + 1) - (y - 7)^2$</p>