Name: Solutions. Date: _____

Baldivis Secondary College

Year 11 Applications

Test 2, 2016

Topics – Other Financial Considerations and Pythagoras' Theorem

52	
=___ %	

Total Time: *50 minutes*

Total Reading: *5 minutes*

Total Working: *45 minutes*

Weighting: *4% of the year,8% of the semester.*

Equipment: *SCSA Formula Sheet; 1 page notes (A4 one side, **Unfolded**), CASIO ClassPad; Scientific Calculator*

SECTION 1: CALCULATOR FREE

Time:	*17 minutes*	**Marks for Section 1:**	*15*
Reading:	*2 minutes*	**Equipment Allowed:**	*Nil*
Working:	*15 minutes*		

1. [3 marks]

A section of a spreadsheet, provided below, shows the number of hours worked by three students during the course of a week. The students are paid **time and a half on Saturdays** and **double time on Sundays**.

	A	B	C	D	E	F
1	**Name**	**Rate ($/hour)**	**Weekday hours**	**Saturday hours**	**Sunday hours**	**Total pay**
2	Gen	20	5	6	3.5	
3	Bri	22.5	10	3	3	
4	Ala	23.68	8	4	6	

a) How much will Gen earn in a week?

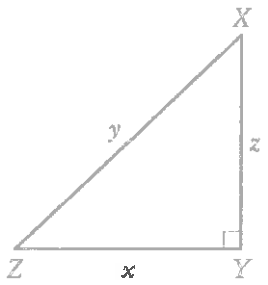
Gen = $20 \times 5 + 1.5 \times 20 \times 6 + 2 \times 20 \times 3.5$ ✓

$= 100 + 180 + 140$ ✓

$\$420$ ✓

2. **[1 mark]**

Which equation below is correct for triangle *XYZ* according to Pythagoras' theorem?



A $x^2 = y^2 + z^2$

B $y^2 = x^2 - z^2$

C $y^2 = x^2 + z^2$ ✓

D $x^2 = z^2 + y^2$

E $z^2 = x^2 + y^2$

3. **[3 marks: 1, 1, 1]**

Cereal is available in the following packs:

300g for $6.00 and *150g for $4.50*

Determine:

a) The cost per gram of the larger box.

$\frac{6}{300} = \$0.02/g$ ✓

b) The cost per gram of the smaller box.

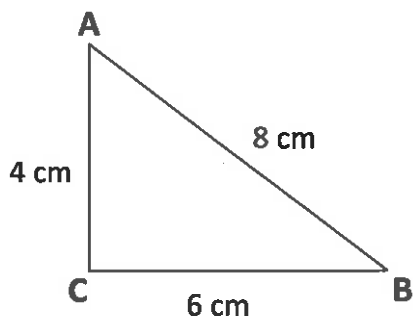
$\frac{4.50}{150}$ $\$0.03/g$ ✓

c) Which of the two packs is the better value?

The 300g for $6 pack is the better buy ✓

4. **[2 marks]**

Determine whether the following triangle is a right angle triangle and give mathematical reasons for your conclusion.



$8^2 = 4^2 + 6^2$

$64 = 16 + 36$

$64 \neq 52$ ✓

Since Pythagoras' Theorem does not apply triangle ABC is not a right angle. ✓

5. **[1 mark]**

Determine the price to earnings ratio for a share with a price of $6.00 and dividends in the last twelve months totalling 75 cents per share.

P/E ratio = $\frac{6}{0.75}$

= 8 ✓

6. **[1 mark]**

Andrew picks cherries and earns $2.50 per bucket. How many buckets does he need to pick to earn ***over*** $300?

$300 ÷ 2.5 = 120 (½)

He needs to pick 121 buckets to earn over $300. ✓

7. **[4 marks: 1, 1, 1, 1]**

This table shows the payment rates for people who are on the Newstart allowance. To be eligible for Newstart you must be 22 years of age or older and unemployed but looking for work.

Status	Dependents	Fortnightly allowance
Single	No	$492.60
Single	Yes	$533
Partnered		$444.70

For each of the following state whether they are eligible. If they are, state the amount of allowance that they receive.

a) Kym, aged 24, is single, unemployed and without children. She is looking for work.

Eligible ½ $492.60 ½

b) Jake, aged 34, is married with no children. He has a part-time job and is looking for full-time work.

not eligible ✓

c) Gregor, aged 28, is a single father who cares for his two children full-time. He is looking for work.

Eligible ½ $533 ½

d) Maxine, aged 20, is single and has one child. She is looking for work.

not eligible ✓

~ END OF TEST SECTION 1 ~

Name: _____ Date: _____

SECTION 2: CALCULATOR ASSUMED

Time:	33 *minutes*	**Marks for Section 2:**	36
Reading:	3 *minutes*	**Equipment Allowed:**	*1 page notes (A4 one side, unfolded), CASIO ClassPad, scientific calculator*
Working:	30 *minutes*		

8. **[8 marks: 4, 2, 2]**

John wants to see which of the two banks in his portfolio of shares is the better performer, and he decides to use the P/E ratio to compare the two banks.

AAA Bank's shares are currently $33.65 while ZZZ Bank's shares are currently $32.055.
AAA Bank has annual earnings of 207.5 cents per share.
ZZZ Bank has annual earnings of 223.1 cents per share.

a) Calculate the *P/E* ratio for each bank and make a recommendation as to which bank John should buy more of, if the *P/E* ratio was the only indicator to be used. Justify your recommendation.

AAA, P/E Ratio = $\frac{3365}{207.5} = 16.2$ ✓

ZZZ, PE Ratio = $\frac{3205.5}{223.1} = 14.37 = 14.4$ ✓

ZZZ Bank has lower P/E ratio so John would be paying less for every dollar of earnings ✓ ∴ John should buy more of ZZZ Bank ✓

b) What percentage of its annual earnings does AAA Bank distribute to shareholders?

Dividends paid = 82 + 84 = 166c per share (½)
Annual earnings per share = 207.5c
% of annual earnings distributed = $\frac{166}{207.5} \times 100$ ✓
= 80% ✓

c) ZZZ Bank paid an interim dividend of 66c per share. It has a policy of paying 65% of its annual earnings as dividends. What would you expect its final dividend payout to be?

65% of 223.1c = 145.015c ✓
145.015 − 66 = 79.015 ✓
Expected final dividend will be approx. 79.015c.

9. **[3 marks]**

Chocolate Easter eggs are on special at a local supermarket.
The larger eggs (110g each) are advertised at 'Two for $4' and the smaller ones (39g) cost $1 each. By calculating the cost per gram of chocolate, determine which size represents better value for money.

Lrg eggs = 400c ÷ 220g
= 1.81 c/g ✓

Sml eggs = 100 ÷ 39
= 2.56 c/g ✓

∴ better value is the large eggs at two for $4. ✓

10. [6 marks: 1, 1, 1, 3]

Shizuko is setting up her weekly budget.

Shizuko's weekly budget			
Income		Expenses	
wage	$	rent & power	$360
		food	$135
		fares	$78
		phone	$
		clothes	$120
		gifts	$35
		entertainment	$150
		savings	$
Total:	$	Total:	$

a) She earns $27.50 per hour for a 37-hour work week. What is her weekly wage?

$27.50 \times 37 = \$1017.50$ ✓

b) What values should go in the total for Income and Expenses?

Income - $1017.50 (½)

Expenses - $878 or $901 (½) ✓ 902.75

c) Her mobile phone plan costs her $99 a month. How much should she budget each week to cover this?

$99 \times 12 \div 52 = \$22.84$

$\simeq \$23$ ✓ or 24.75

d) She hopes to save enough to pay for a $7000 cruise in one year's time. Will she be able to save enough if she sticks to this budget? If not, what would you suggest she do to save more?

Total expenses = 878 + 23

= $901

Savings = 1017.50 − 901

= $116.50 per week. ✓

∴ 1 yr of savings = 116.50 × 52

= $6058 (½)

∴ Not enough for the cruise. (½) ✓

She could cut back her entertainment by $20 p/w and this would mean she would save an extra $1040 a year. ✓

4

11. **[5 marks: 1, 1, 2]**

Answer the following questions using the exchange rate table below.

Rates Converter for 1.00 Australian Dollar
Mar 16, 2016 10:57 UTC

Australian Dollar	1.00 AUD
US Dollar	0.745558
Euro	0.672506
British Pound	0.528228
Indian Rupee	50.142830
Canadian Dollar	0.996065
Singapore Dollar	1.029413
Swiss Franc	0.737082
Malaysian Ringgit	3.091306
Japanese Yen	84.705852
Chinese Yuan Renminbi	4.862035

a) What is $1 Australian dollar worth in US Dollars?

$0.74558

b) What is $1 New Zealand Dollar worth in Aus $?

c) Ammaarah is going overseas on a holiday and wants to exchange $550 Australian into British currency. How much money will she have in British pounds?

$550 \times 0.528228 = 290.52$ British pounds ✓
(rounded down)

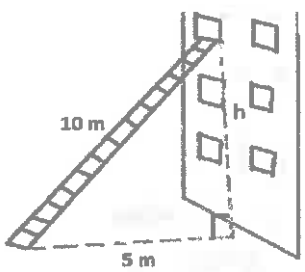
d) Chloe has just arrived home from a holiday in Canada. She had $25 left in Canadian dollars. They charge $5 to exchange money at the local Cash Exchange office. How much money will she end up with after the exchange?

$\frac{25}{0.996065} = \$25.09$ ✓

$25.09 - 5 = \$20.09$ ✓

12. **[2 marks]**

Firemen have a 10m ladder and they are unable to get closer than 5m from the base of a building due to obstructions. Will the ladder be long enough to reach a window that is 8.5m high? (Show all working)



$l = \sqrt{5^2 + 8.5^2}$
$= 9.86$m (2 d.p.) ✓

OR $h = \sqrt{10^2 - 5^2}$
$= 8.66$m ✓

The ladder will be long enough to reach the window ✓

13. **[1 mark]**

Dayna picks apples to earn some extra cash during her holidays. If Dayna is paid at a rate of 25 cents per kg of apples she picks, how much will she earn if she has picked 120.5kg?

Pay = 120.5 × 0.25 (½)
= $30.13 ✓

14. **[2 marks: 1, 1]**

a) Shanaya's take home salary after tax is $45 850 p.a. If she gets paid fortnightly, how much is her fortnight pay?

$45 850 ÷ 26 (½) = $1763.46 ✓

b) Defence personnel living away from their families receive a yearly family separation allowance of $2 560. If a Defence member earns a salary of $95 000 and they qualify for the separation allowance, what would be their weekly pay?

Weekly pay = (95 000 + 2560) ÷ 52 (½)
= $1876.15 ✓

14. **[2 marks]**

Assuming that the annual rate of inflation remains steady at 2.9%, what would the value of an item be in three years' time if it costs $90.00 now?

15. **[7 marks: 3, 1, 3]**

Paula bought 5500 shares in *Qantas Air* at $2.47 per share, with 1.7% brokerage (added to the cost).

a) Calculate the total cost of buying her shares.

Shares = 2.47 × 5500
= $13585 ✓

Brokerage = 13585 × 1.7%
= $230.95 ✓

Total = 13585 + 230.95
= $13815.95 ✓

b) If the company pays a dividend of 14c per share, calculate Paula's dividend.

Dividend = 5500 × 0.14 (½)
= $770 ✓

c) Paula sells her shares one year later when the market price of the shares is $2.80. She paid 1.7% brokerage. Calculate her total earnings on the shares, after costs.

Selling price = 5500 x 2.8
= $15400 ✓

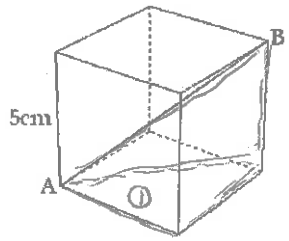
Brokerage = 15400 x 1.7
= $261.80 ✓

Total earnings = 15400 + 770 − 13815.95 − 261.80
= $2092.25 ✓

16. [4 marks]

The diagram shows a cube of side 5cm. Find the length of AB.

Hint: You will need to use Pythagoras' Theorem twice – find one side and then use it to find AB.



$h_{\triangle} = \sqrt{5^2 + 5^2}$ ✓

$= \sqrt{50}$

$= 7.07\text{cm}$ ✓

$AB = \sqrt{7.07^2 + 5^2}$ ✓

$= \sqrt{74.9849}$

$= 8.66\text{cm}$ ✓

~ END OF TEST SECTION 2 ~