Name: Solutions Date: _____

Year 11 Applications

Test 3, 2018

Baldivis Secondary College

Topics – Other Financial Considerations and Pythagoras' Theorem

Total Time:	***45** minutes*
Total Reading:	*5 minutes*
Total Working:	*40 minutes*
Weighting:	*4% of the year, 8% of the semester.*
Resources:	*SCSA Formula Sheet; 1 page notes (A4 one side, **Unfolded**), CASIO ClassPad; Scientific Calculator*

_____ / 45 = _____ %

-½ no $ or %
-½ IR
-½ no units

Resource Free Section – 11 min total (2 min reading time) **[11 marks]**

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	Suzy	24	5	6	4	
3	Roger	30	10	3	3	
4	Coco	27.50	8	4	6	
5						**Combined Total Pay**

a) How much will Roger earn in a week?

$30 × 10 = $300
$30 × 3 = $90 × 1.5 = $135 (90+45)
$30 × 3 × 2 = $180

300 + 135 + 180
= $615 weekly ✓

b) If you were using a spreadsheet application (Excel or your ClassPad), what formula would you input (using cell references) to add up the three students combined weekly pay for cell F5?

=SUM(F2:F4) ✓
or
=F2+F3+F4

2. [1 mark]

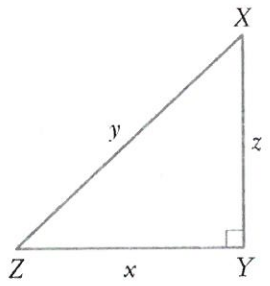
Determine the price to earnings ratio for a share with a price of $9.00 and dividends in the last twelve months totalling $1.50 cents per share.

1 $\frac{9}{1.5} = 6$ ✓

4

3. [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 $z^2 = x^2 + y^2$

4. [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) Daniel, aged 24, is single, unemployed and without children. He is looking for work.

$492.60 ✓

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

no or $0 ✓

c) Isabella, aged 28, is a single mother who cares for his two children full-time. She is looking for work.

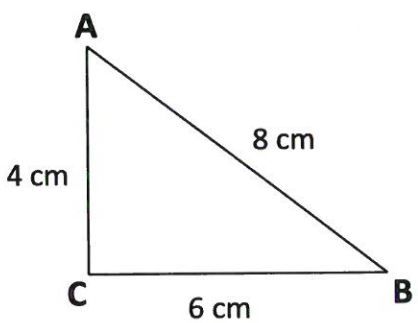
$533 ✓

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

no or $0 ✓

5. [2 marks]

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



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

$16+36=52$ $8^2=64$

$52 \neq 64$ ✓

2

∴ not right angled ✓

7

Resources Allowed Section – 34 min total (3 min reading time) Solutions **[34 marks]**

6. **[3 marks: 1, 2]**

a) Riley's take-home salary after tax is $55 750 p.a. If she gets paid fortnightly, how much is her fortnight pay?

55750 ÷ 26 = $ 2144.23 fortnightly

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?

✓ 95000 + 2560 = 97560

97560 ÷ 52 = $1876.15 ✓

7. **[7 marks: 1, 2, 2, 2]**
Htan is setting up his weekly budget.

Htan's weekly budget			
Income		Expenses	
Wage	$	rent & power	$460
		food	$165
		fares	$68
		phone	$20
		clothes	$100
		gifts	$35
		entertainment	$175
		savings	$ 179.50
Total:	$	Total:	$

a) He earns $32.50 per hour for a 37-hour work week. What is his weekly wage?

37 × $32.50 = $1,202.50 ✓ -½ without zero

b) Htan's mobile phone plan costs him $80 a month. How much should he budget each week to cover this?

$80 ÷ 4 = $20 ✓ ✓ or ~~$80~~ 31 day month

c) List two of Htan's expenses that are Fixed and two that are Discretionary.

rent, power, food, fares ✓ clothes, gifts, entertainment ✓

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

Total expenses ~~mon~~ weekly = $1,023
Total earnings weekly = $1,202.50
✓ $179.50 (amount he can save each week)

$179.50 × 52 = $9,334 ✓ (yes he can go on the cruise)

To save more he could cut down discretionary spending.

Still got 1 if mark wrong answer added but this

8. **[9 marks: 4, 1, 2, 2]**

Isaiah has purchased a second-hand car and has made a list of expenses that come with owning it.

- Monthly car loan repayment $600
- Insurance $1650 p.a.
- Registration $750 p.a.
- Roadside assist $340 p.a.
- Parking $55/week

In addition, Isaiah estimates that he will need to allow $600 for services and $800 for tyres and repairs for a year.

His car has a fuel consumption rate of 8.5L/100km and he estimates that he will travel 20,000km in a year. He expects that that average price of fuel will be $1.40 per litre.

To help him keep track of running costs, Isaiah has set up the following spreadsheet.

	A	B	C
1	**Car Running Costs**		
6	**Costs**	**Annual Cost**	**Weekly Cost**
7	Loan Repayment	7200	138
8	Insurance	1650	32
9	Registration	750	14
10	Roadside Assist	340	7
11	Parking	2860	55
12	Fuel	2380	46
13	Services	600	12
14	Tyres and Repairs	800	15
15	**Total**	16580	319

a) Use the given values to complete the table, including the annual and weekly costs (i.e. fill in all blank cells in the table). Round all costs to the **nearest dollar.**

-½ initial errors (not FT)
-2 max for rounding errors

4

b) What formula must be entered into cell C8?

= B8 ÷ 52 ✓

-½ for no equal sign ↘ formula has to have one

c) The entry in cell C15 can be found by entering two different formulae. State them.

✓ = SUM (C7:C14) or = C7+C8+C9+C10+C11+C12+C13+C1

✓ = SUM (B7:B14) ÷ 52 or = B15 ÷ 52

d) How much must Isaiah set aside monthly to cover his car running costs?

16,580 ÷ 12 = $ 1,381.67

or

319 × 4 = $ 1,276 ✓ ✓

4

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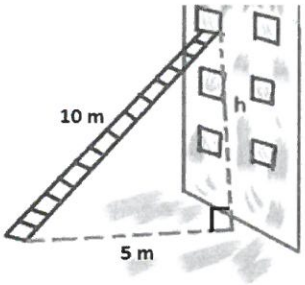
9. **[2 marks]**

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)



$5^2 + 8.5^2 = 10^2$? ✓

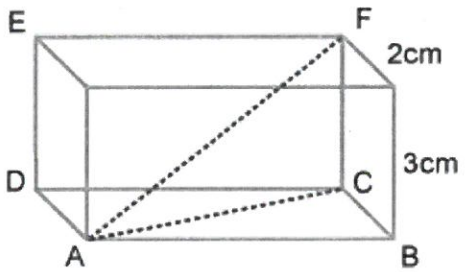
$97.25 = 100$ ✓

yes long enough to reach or no, too long

technically both are correct and the ladder could be moved farther than 5m

10. **[4 marks]**

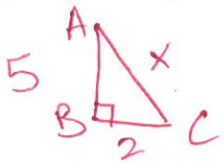
The rectangular prism shown below has a length of 5cm, a width of 2cm and a height of 3cm.



5 cm

a) Consider ΔABC:

i) Find the length of AC



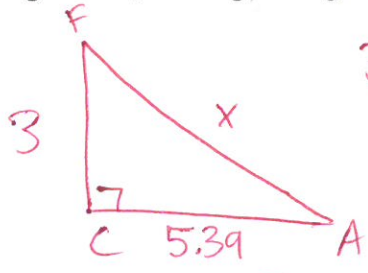
$5^2 + 2^2 = x^2$

$\sqrt{29} = 5.39\text{cm}$ ✓

ii) State the size of ∠CBA

90° ✓

b) Find the length of AF, the longest diagonal of the prism, giving your answer correct to 1 decimal place



$3^2 + 5.39^2 = x^2$

$\sqrt{38.05} = 6.2\text{cm}$ ✓

✓

6

11. [5 marks]

Julia is a freelance programmer and she earns an amount for each app she creates based on the following criteria:

- Complex Apps: $70/hr for every hour she works on it + $2000 bonus for completing it on time
- Simple Apps: $55/hr for every hour she works on it + $1200 bonus for completing it on time

Julia completes the following apps over the course of a month:

1. Super Crazy Rhinos: Simple, took 14hrs to complete on time
2. Leisure Suit Carrie Complex, took 18hrs to complete on time
3. Teacher Lyfe: Attack of the Reports Complex, took 28hrs to complete on time
4. Yoda Tha Yogi Simple, took 8hrs but was **not** completed on time

How much did Julia earn this month?

$(55\times14)+1200=1970$ ✓
$(70\times18)+2000=3260$ ✓ $= \$9630$ ✓
$(70\times28)+2000=3960$
$(55\times8)=+440$

12. **[4 marks]**

Shown below are Alex's share portfolio details with the dividend per share.

Company	Number of Shares	Market Price	Dividend per share
AusCan Holdings	4000	$3.68	$0.18
Yakka Retail	700	$15.40	$1.76
EnZed Minerals	11000	$1.98	$0.96
OmniGlobal Pty	8000	$7.20	No Dividend

a) Calculate the total value of this share portfolio.

$4000\times3.68=14720$ ✓
$700\times15.40=10780$ +
$11000\times1.98=21780$
$8000\times7.20=57600$
$= \$104,880$ ✓

b) What dividend will the investor receive?

$4000\times0.18=720$
$700\times1.76=1232$ ✓ +
$11000\times0.96=10560$
$8000\times0=0$
$= \$12,512$ ✓

13. **[2 marks]**

a) A company declares its annual dividend to be equal to 8% of its share price. What is the company's price to earnings ratio?

$\frac{1}{0.08}$ or $\frac{100}{8} = 12.5$ ✓

b) if a company has a price to earnings ratio of 25, express its current dividend per year as a percentage of the share price.

$25=\frac{100}{x} = 4$
4% ✓

~ END OF TEST SECTION 2 ~

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