GREENWOOD COLLEGE

MATHEMATICS APPLICATIONS
Test 1 2017
Finance
Section A-Resource Free
Marks: 20 Time Allowed: 20 minutes

Name: Solutions

ALL working must be shown for full marks.

Question 1 **[3 marks]**

What number would you multiply by to :

a) Find 8% of an item

0.08

b) Find 230% of an item

2.3

c) Increase by 15%

1.15

d) Increase by 0.6%

1.006

e) Decrease by 2%

0.98

f) Decrease by 10.5%

0.895

Question 2 **[1, 1, 1 = 3 marks]**

Find the following amounts

a) 25% of $460

$115

b) Increase $300 by 20%

$360

c) Decrease 80kg by 5%

76kg.

Question 3 **[2, 1, 2 = 5 marks]**

a) Calculate the Simple Interest earned on an $8000 investment, over 2 years with an interest rate of 10%pa.

$SI = P \times R \times T$

$= 8000 \times 0.1 \times 2$ ✓

$= \$1600$. ✓

b) What would be the total amount of money in the account after the 2 years?

$1600 + 8000 = \$9600$ ✓

c) If the $8000 was invested over 2 years, compounded quarterly at a rate of 2.5% per quarter would the interest earned be more, less or the same as the interest in part a)? Explain your answer.

$CI = P\left(1 + \frac{R}{n}\right)^{T \times n}$.

$= 8000\,(1.025)^{8}$

$= \$9747.22$ ✓

$P = 8000$

$R = 2.5\text{p quarter}$

$= 0.025$

$T = 2\text{yrs} = 8\text{quarters}$

(more than part a) $9747.22 - 9600 = \$147.22$

Question 4 **[1, 2 = 3 marks]**

a) Emily owns a coffee shop and decides to increase the cost of a large coffee from $4.00 to $4.80. What was the percentage increase she placed on the coffee?

$\frac{\text{Inc}}{\text{Original}} \times 100$ $\frac{0.80}{4} \times 100$

$= 20\%$ increase. ✓

b) If she placed the same percentage increase on her $3.50 lemon cupcakes, what would their new price be?

$\$3.50 \times 1.2$ ✓

$= \$4.20$ ✓

or:

$\$3.50 \times 10\% = 35c$

$20\% = 70c$.

(✓)

$\$3.50 + 70c$

$= \$4.20$

Question 5 **[2, 1, 1, 2 = 6 marks]**

A young person who lives in a shared house with friends has just started a new job after leaving school and is drawing up a budget to see how much of their $480 weekly take home pay they can save for a holiday later in the year.

	Frequency of payment	
Expense	Weekly ($)	Fortnightly ($)
Rent	150	300
Household bills	35	70
Food and toiletries	115	230
Mobile phone plan	30	60
Health insurance	20	40
Entertainment	60	120
Travel costs	30	60
Clothing	25	50
Total	465	

a) Complete the weekly and fortnightly payments for the table above.

- ½ each error

b) Name one expense from the table above that is an example of a fixed expense.

Rent, Phone Plan, Health Ins, Bills (✓)

c) Name one expense from the table above that is an example of a discretionary (variable) expense.

Travel, Clothing, Entertainment, food (✓)

d) If the young person has no other expenses, calculate how much of their $480 weekly take home pay they can save for a holiday.

$480 − $465 = $15 per week.
(✓) (✓)

GREENWOOD COLLEGE

MATHEMATICS APPLICATIONS
Test 1 2017
Finance
Section B-Resource Assumed
Marks: 36 Time Allowed: 35 minutes

ALL working must be shown for full marks.

Question 1 **[4 marks]**

Mr Martin needs to purchase new whiteboard markers for the Mathematics Department. The following packs are available: Pack of five for $14.99
Pack of eight for $17.19
Pack of six for $15.49

Calculate the unit price for each pack and decide which Mr Martin should purchase?
Show all working out for full marks.

① 5 pack
$14.99 \div 5$
$= 2.998$
$= \$3.00$ ✓

② 8pack
$17.19 \div 8$
$= 2.14875$
$= \$2.15$ ✓

③ 6 Pack
$15.49 \div 6.$
$= 2.5816$
$= \$2.58$ ✓

Should purchase the 8pack ✓

Question 2 **[2, 2 = 4 marks]**

Mrs Clayton invested $140 000 in a bank account that paid 2.4%pa compounded monthly for 5 years.

a) How much Interest would Mrs Clayton earn on this investment?

$$CI = P\left(1 + \frac{R}{n}\right)^{T \times n}$$
$$= 140\,000\left(1 + \frac{0.024}{12}\right)^{5 \times 12}$$
$$= \$157\,830.64 \quad (\checkmark)$$

Interest only $= \$157830.64 - 140000$
$= \$17830.64$ (✓)

b) What would the rate of simple interest need to be in order to match the interest she earned in part a) over the same period of time? Give answer to 2dp.

$$SI = P \times R \times T$$
$$17830.64 \times 140\,000 \times R \times 5 \quad (\checkmark)$$
$$R = 0.22547$$
$$= 22.55\% \quad (\checkmark)$$

Question 3 **[4, 2 = 6 marks]**

Penny has been offered a choice of three jobs and needs to decide which to accept based on how much she will be paid. Her options are:

(1) - Working as an accounts clerk on an annual salary of $53 250.

(2) - Working in real estate on a commission of 2.25% with annual sales of $2 300 000

(3) - Working 8 hours a day, Monday to Saturday at $14.00 an hour with time and a half on Saturday.

a) Calculate her weekly pay for each job.

(1) $53250 \div 52$

$= \$1024.04$ (✓)

(2) $2\,300\,000 \times 0.0225$

$= \$51\,750$ Annually

$= \$995.19$ (✓)

(3) (✓)

$8 \times 5 \times 14 + 8 \times 1.5 \times 14$

$= \$728$ per week (✓)

b) What is her best option and by how much?

Accounts Clerk (✓) by $\$1024.04 - \$995.19$

$= \$28.85$ (✓)

Question 4 **[2, 4 = 6 marks]**

Below is the bank statement for Bob Brown from 1st May to the 31st of July. Interest is paid in this account at 2.5% pa on the minimum monthly balance.

Date	Debit	Credit	Balance
1 May			$4500
15 May	$1000		$3500
6 June	$221		A 3279
21 June	$864		$2415
28 June		$452	$2867
8 July	B = 923		$1944
31 July		$1600	$3544

a) Complete the bank statement from May to July by finding A and B.

A = $3279 (✓)

B = $923 (✓)

b) Calculate the total interest earned for this 3 month period.

May: $3500 \times 0.025 \times \frac{31}{365}$ $= \$7.64$ (✓)

June: $2415 \times 0.025 \times \frac{30}{365}$ $= \$4.96$ (✓)

July: $1944 \times 0.025 \times \frac{31}{365}$ $= \$4.13$

Total $\$16.73$ (✓)

Question 5 **[1, 1, 4, 2 = 8 marks]**

Mrs Griffin and Mrs Byrne both went on Holiday with $5000 spending money. Mrs Griffin went to Japan while Mrs Byrne went on a holiday to Hong Kong. Use the following table to answer the questions below.

Country/Region	Currency unit	Code	Buying	Selling
Canada	Dollar ($)	CAD	1.1153	0.9831
China	Renminbi	CNY	6.8290	6.1069
European Union	Euro (€)	EUR	0.8496	0.7559
Fiji	Dollar ($)	FJD	2.0357	1.7333
Hong Kong	Dollar ($)	HKD	8.9430	7.7528
India	Rupee (Rp)	INR	67.7210	49.0576
Japan	Yen (¥)	JPY	100.8400	86.6427

a) How many Japanese Yen will Mrs Griffin have at the start of her holiday?

$5000 \times 86.6427 = ¥433213.50$ (✓)

b) How many Hong Kong Dollars will Mrs Byrne have at the start of her holiday?

$5000 \times 7.7528 = 38764 (HK\$)$ (✓)

c) By the end of their holiday Mrs Griffin and Mrs Byrne both have half of their spending money left. When they convert their money back to Australian Dollars how many Australian Dollars will each teacher have? Show all your working.

i) Mrs Griffin will have

$433213.50 \div 2 = 216606.15$ (✓)

$216606.15 \div 100.84 = \$2148.02$ (✓)

ii) Mrs Byrne will have

$38764 \div 2 = 19382$ (✓)

$19382 \div 8.9430 = \$2161.28$ (✓)

d) Do they both return with the same number of Australian Dollars? Explain your answer.

No (✓) Exchange rate is different! (✓)

Question 6 **[1, 2, 1, 2, 2 = 8 marks]**

A person who qualifies for a particular government pension will be paid $776.70 per fortnight, so long as they do not earn more than $160 in that time. In any fortnight that they do earn more than $160, their pension will be reduced by 50 cents in the dollar for earnings over $160.

a) A man who qualifies for this pension starts a part time job for 18 hours per week that pays $15.25 per hour.

(i) Calculate the fortnightly earnings of the man.

$18 \times 15.25 \times 2 = \$549$

(ii) By how much will his fortnightly pension be reduced?

$549 - 160 = \$389$ (✓)

$389 \times 0.5 = \$194.50$ (✓)

(iii) Determine the fortnightly sum of his job earnings and pension.

$549 + 776.70 - 194.50$

$= \$1131.20$ (✓)

b) A woman who qualifies for this pension earns $938 each fortnight. Calculate the fortnightly pension she receives.

Reduced by $(936 - 160) \div 2 = \$389$ (✓)

Pension $= 776.70 - 389$

$= \$387.70$ (✓)

c) If a qualifying person earns enough in a fortnight, their payment reduces to $0. Determine the minimum amount a person must earn to reach this cut off point.

$776.70 \times 2 = 1553.40$ (over $160) (✓)

Earnings $\$1713.40$ (✓)