SOLUTIONS

Name: _____

Mathematics Essential
Test 8, 2015
Topics – Applying Percentages

	70
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Total Time: ***60*** *minutes*

Total Reading: *5 minutes*

Total Working: *55 minutes*

Weighting: *4 percent*

Equipment Allowed: *Calculator, 1 page of A4 notes.*

You must include all working out to receive full marks

CALCULATOR ASSUMED

1. [4 marks: 1/2 each]
Use the following words to complete the sentences below:

instalment *dividends* *interest* *flat-rate* *deposit* *simple* *investment*
depreciate *per annum* *shares* *principal* *decrease*

a) The initial amount of money used to secure a purchase is known as a deposit.

b) Simple interest is also known as flat-rate interest.

c) The principal is the original sum of money either borrowed or invested.

d) Interest can be earned on an investment or paid to a bank or other financial organisation for borrowings.

e) Amounts payable yearly they are referred to as occurring per annum

f) Companies pay dividends to shareholders based on yearly profits.

g) Cars, office equipment and other items depreciate overtime, in other words they lose value.

2. [4 marks: 1, 1, 1, 1]
Convert the follow interest rates from a percentage to decimal

a) 15% 0·15

b) 10% 0·10

c) 4% 0·04

d) 200% 2·00

3. [2 marks: 1, 1]
Convert the following decimals to their equivalent percentage

a) 0.375 37.5%

b) 1.45 145%

4. [3 marks: 2, 1]

Edward is trying to cut down on his sugar consumption, he is comparing his current cereal Fab Flakes with a new brand Real Crunch. Fab Flakes has 17g of sugar per 200g serving while Real Crunch has 22g of sugar per 225g serving.

a) Calculate the percentage of sugar in each cereal.

F.F 8.5% RC 9.7%

b) Which cereal should Edward eat in his effort to reduce his sugar intake?

Fab Flakes

5. [7 marks: 4, 1, 2]

Sophia studies each weeknight for two weeks leading up to her exams. Her study timetable is detailed below.

	Week 1					Week 2				
	Monday	**Tuesday**	**W'day**	**Thursday**	**Friday**	**Monday**	**Tuesday**	**W'day**	**Thursday**	**Friday**
English	1½ hour	½ hour		40mins	¾ hour	¾ hour		¾ hour	1½ hours	60mins
Science	¾ hour		¾ hour	½ hour		55mins	¾ hour	½ hour		
Math		1 hour	20mins	½ hour	1½ hour	25mins	¾ hour		1 hour	60mins
HASS	½ hour		20mins	20mins	¾ mins		60mins	25mins		

a) What percentage of time did she spend on each subject?

ENG 34.63% SCI 19.46%

MATH 30.35% HASS 15.56%

b) Rank the subjects in order from smallest percentage to the highest?

HASS 15.56% SCI 19.46% MATH 30.35%
ENG 34.63%

c) Which night did she spend the highest percentage of time on HASS and what percentage was it?

TUESDAY WK 2 20%

6. [3 marks: 1, 1, 1]
The simple interest formula can be written: I = P.r.n

a) What does P represent? Principal

b) What does r represent? Rate

c) What does n represent? Number of years / Time period

7. [7 marks: 1, 2, 2, 2]
Determine the following amounts

a) What is 10% of $3000? $300

b) What is 5% of $200? $10

c) What is 1% of $420? $4.20

d) What is 200% of $80? $160

8. [5 marks: 1, 1, 3]
Paulo is saving for the deposit for his first house. Each month he deposits $800 into his First Home Savers Account.

a) How much does Paulo deposit into the account each year?

$9600

b) The Commonwealth government also deposits 17% of the value of Paulo's annual savings into his account. How much does the government deposit into Paulo's account each year?

$1632

c) How much will Paulo have in his Home Savers Account at the end of 3 years?

$33696

9. [4 marks: 2, 2]
Before Shelby installed insulation in her home her 2-monthly electricity bill was $470. After she installed insulation her bill was 35% smaller.

a) How much did Shelby save every 2-monthly electricity bill after she installed the insulation?

$164.50

b) Calculate the amount Shelby will pay annually for electricity after the insulation is installed.

$1833

10. [9 marks: 2, 2, 1, 2, 2]
Use the table below to answer the following questions.

Maximum loan at 7.5%pa interest for different monthly incomes.

Monthly Income	30% of Income	Maximum Loan 15 Years	Maximum Loan 20 Years	Maximum Loan 25 Years
2500	750	80 000	90 000	100 000
3000	900	95 000	110 000	120 000
3500	1050	120 000	135 000	145 000
4000	1200	125 000	145 000	165 000
4500	1350	145 000	165 000	175 000
5000	1500	160 000	185 000	200 000
5500	1650	180 000	200 000	220 000
6000	1800	200 000	220 000	250 000

Monthly repayments required for loans at 7.5%pa interest.

Loan Amount	Repayments 15 Years	Repayments 20 Years	Repayments 25 Years
50 000	464	403	370
60 000	557	484	444
70 000	649	564	518
80 000	742	645	592
100 000	928	806	739
125 000	1159	1007	924
150 000	1391	1209	1109
200 000	1855	1612	1478
250 000	2318	2014	1848

a) Patrick's gross monthly income is $5500. What is the maximum amount he is able to borrow at 7.5% p.a. interest? $220 000

b) Patrick decided to borrow $200 000 at 7.5% p.a. interest over 20 years. Determine the amount of his monthly repayments and the total amount he will repay. $1612 monthly
total. $386 880

c) How much more than he borrowed will Patrick repay? $186 880

d) If Patrick had decided to borrow the same amount over 25 years instead how much in total would this have cost him? $443 400

e) Which option was better for Patrick in the long term? Explain. The first because it cost him nearly $60000 less

11. [9 marks: 1, 1, 2, 3, 2]

Claire decides to buy a car for $25 000. She has 10% deposit and has to borrow the balance. Claire decides to borrow the balance from a finance company at the interest rate of 7.5% p.a. flat. She takes the finance over 5 years.

a) How much does Claire have saved for a deposit?

$2500

b) How much does Claire have to borrow from the finance company?

$22500

c) How much interest will the finance company charge on the loan per annum?

$1687.50

d) What will Claire's monthly repayments be?

$515.63

e) How much will Claire end up paying in total for her car?

$30 937.50

12. [6 marks: 1, 1, 1, 1, 2]

Jordan is building a bookcase for his room and discovers that his dad gets a trade discount of 20% at the hardware shop. His dad tells him that if they pay cash on the day of purchase they get an extra 5% off. Jordan works out what materials he will need including screws, paints and tools, the total comes to $178.87.

a) What is the trade discount on this amount?

$35.77

b) Jordan has decided to pay cash how much extra does he get off the recommended retail price by taking advantage of this offer?

$7.16

c) What is the total discount Jordan has received?

$42.93

d) How much does Jordan end up paying for his materials?

$139.95

e) What percentage discount does this work out to be (hint: it is not 25) ?

24%

13. [7 marks: 1, 1, 2, 1, 2]

Dani works in a clothing shop that has a mark up of 85% on the wholesale price of the products it sells. It is Dani's job to price products as they are delivered and after adding the mark up she has to add an extra 10% for GST.

a) Some lamps are delivered which are invoiced to the shop for $165, what will the price be before GST?

$305.25

b) What will the price be after Dani adds GST?

$335.78

c) What price will Dani probably put on the price tag and why?

$335.99

d) Dani has also been asked to mark down some old stock for clearance and has been told to take 40% off. How much will the vase be marked down to if it was originally priced to sell at $269?

$161.40

e) Dani's boss has just invested in some new cash registers and she asks Dani to check what the depreciation will be if they depreciate at 20% each year and cost her $4578 to purchase?

$915.60