|  |  |  |  |
| --- | --- | --- | --- |
| Description: pact jpg1 | **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Mathematics Essential**  **Test 8, 2015**  **Topics – Applying Percentages** | | 70  = |
| **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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b) Simple interest is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ interest.

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

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

e) Amounts payable yearly they are referred to as occurring \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

f) Companies pay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to shareholders based on yearly profits.

g) Cars, office equipment and other items \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 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% ­ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) 10% \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) 4% \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) 200% \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Convert the following decimals to their equivalent percentage

a) 0.375 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) 1.45 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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.

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

**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 |  |  |

1. What percentage of time did she spend on each subject?

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

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

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

The simple interest formula can be written: I = P.r.n

a) What does P represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) What does r represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) What does n represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Determine the following amounts

a) What is 10% of $3000? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) What is 5% of $200? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) What is 1% of $420? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) What is 200% of $80? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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?

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?

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

**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?

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

**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? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) How much more than he borrowed will Patrick repay? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

e) Which option was better for Patrick in the long term? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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?

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

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

d) What will Claire’s monthly repayments be?

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

**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?

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

c) What is the total discount Jordan has received?

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

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

**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?

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

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

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?

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?