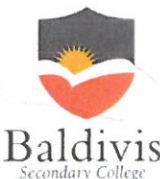


Name:	<u>Answers</u>		Date: <u>9/9/18</u>
Teacher :	<u>Power</u>		
	Year 12 Essentials Compound interest and Depreciation <u>Full working out MUST be shown to get full marks for each question.</u>		
			/28
Total Time:	1 period		
Weighting:	7.5%		
Equipment:	To be provided by the student: Pen, pencil, ruler, scientific calculator, 1- 2-sided page of notes		

For this investigation, you will need to track the value of Maisy's bank account across some purchases she makes, and answer with a final amount that she will have as a residual value.

Maisy was given a \$10,000 lump sum amount of money when she was 10 years old by her Uncle, to put towards giving her a head start in life. Her father put it into a 6.2% high interest account, compounding monthly, with the caveat that it would be held in trust for at least 15 years before Maisy could access the money. Last week her car broke down and her laptop broke, luckily she just turned 25, so she is going to access this account and purchase these new items. *How much is the account worth now it has matured?*
[3]

$$10000(1 + 0.062)^{15} = \$24,652.89 \text{ (2dp)}$$

-1 not dollars

Firstly, Maisy needs to purchase a new MacBook, which is \$3200. She uses this for work, and can depreciate it at 20% for the next 5 years. Find the residual value of the MacBook at the end of the 5 year life cycle.

[3]

$$\begin{array}{r}
 24\,652.89 \\
 - 3\,200.00 \\
 \hline
 \$21,452.89
 \end{array}$$

$$3200(1 - 0.2)^5 = \$1048.58$$

-1 No Dollars

(6)

Next, Maisy looks to buy a new Subaru Impreza, listed for 23,950. She decides to put down 40% of the cost in cash. To cover the last 60%, She takes out a low interest car loan for the next 3 years. The loan interest is 3.2% compounding biannually. She also has to pay stamp duty, which is 3% of the cost of the vehicle. How much does she need to pay in total for the repayments?

[6]

$$\begin{array}{r}
 21,452.89 \\
 - 9,580.00 \\
 \hline
 11,872.89
 \end{array}
 \quad
 \begin{array}{l}
 23,950 \times 0.4 = 9,580 \quad \checkmark \text{ money} \\
 23,950 - 9,580 = \boxed{14,370} \\
 \checkmark 60\% \\
 14,370 \left(1 + \frac{0.032}{2}\right)^6 = 15,805.89 \quad \checkmark \text{ 6 comp, Ans} \\
 \text{SD} = 718.50 \quad \checkmark \text{ stamp duty} \\
 \hline
 \underline{\underline{16,524.39}} \quad \checkmark \text{ total}
 \end{array}$$

Maisy opts for a fortnightly repayment schedule. Calculate the amount of money that she needs to repay fortnightly on the car across the term of the loan?

[2]

$$\frac{16,524.39}{(26 \times 3)} = \$211.85 \quad \checkmark \text{ Ans.}$$

w.o

Unfortunately, cars lose value over time, and Maisy's new Subaru is no exception. While not being precise, we can average this out to be about 9% lost per year. How much would Maisy's car be worth at the end of the loan?

[3]

$$\begin{array}{l}
 \text{value} \\
 23,950 \times (1 - 0.09)^3 \quad \checkmark \text{ 3 yrs} \\
 \hline
 = \$18,048.03 \quad \checkmark \text{ Ans}
 \end{array}$$

In a separate account, Maisy has been saving her money towards a home deposit. She is putting away \$1200 a fortnight to save for a home deposit. She already had \$13,000 when she bought her car. Her bank compounds this account on the 31st of December each year at 3.2%. Find out the amount of money she would have at the end of the 3 year repayment schedule.

[7]

$$Y_1 = 13000 + 31200 = 44,200 \times (1.032) = \boxed{45614.4} \quad \text{EOY1}$$

$$Y_2 = 45614.4 + 31200 = 76814.4 \times (1.032) = 79272.46$$

$$Y_3 = 79272.46 + 31200 = 110472.46 \times 1.032 = \boxed{8114007.58}$$

Lastly, Maisy, now 28, needs to move out of her rental and get her own place. She is looking at an apartment in East Perth, near the casino. The Cost of the unit she is considering is \$585,000. The bank says she needs a 25% deposit to avoid extra charges. Does she have 25% of the loan amount in her current assets (Savings account and Car)?

[4]

$$\text{Home Account} = 114007.58$$

$$\text{Uncle Account} = 11872.89$$

$$\begin{aligned} \text{Car Value} &= 18048.03 + \\ &= \underline{143928.50} \quad \text{2dp} \end{aligned}$$

$$25\% \text{ of } 585,000 = \boxed{146,250}$$

∴ Not enough yet.

