Simple and Compound Interest

1. Find the simple interest earned on $6000 at 12% pa for 5 years.

$$I = PRT$$
$$= 6000 \times 0.12 \times 5$$
$$= \$3600$$

Indicated sound understanding of calculating simple interest

2. A new car, valued at $28 000, depreciates at 9% pa. Find the value of the car 3 years after purchase.

$$A = P(i - r)^n$$
$$= 28000 (1 - 0.09)^3$$
$$= \$21099.99$$

Recognised that depreciation decreases the value of an item

3. (a) Using the compound interest formula, find the amount that $5000 will grow to when invested at a rate of 12% pa for 2 years, compounded quarterly.

$$A = P(1 + r)^n \quad 5000(1 + 0.03)^8$$
$$\cancel{5000 (1 + 0.12 \cdot 4)}$$
$$= \cancel{5000 (1 + 0.12)^8} = \$6338.85$$
$$= \cancel{\$5304.50}$$

Successfully applied the compound interest formula when compounding at particular intervals

(b) Find the interest earned.

$$\$1333.85$$

4. $240 interest is earned on a principal of $1500 at a simple interest rate of 4% pa. For how many years was the principal invested?

$$I = PRT$$
$$= 1500 \times 0.04 \times ?$$
$$= \$240$$
$$4 \text{ years}$$

Correctly calculated the number of years but did not provide clear evidence of the process

5. Stephen bought a car for $12 400 on the following terms:
    15% deposit
    18% pa simple interest
    Repayments made monthly for 2 years

    (a)   How much was the deposit?

    $\frac{15}{100} \times 12400 = \$1860$

    (b)   What was the balance owing after payment of the deposit?

    $12400 - 1860$
    $= \$10540$

    (c)   How much interest was charged on the balance?

    $I = PRT$
    $= 10540 \times 0.18 \times 2$
    $= \$3794.40$

    (d)   What was the total amount of Stephen's repayments over the 2 years?

    $3794.40 + 1860 +$ $\boxed{12400 + 3794.40}$
    $= \$565$ $= \$16194.40$

    (e)   What was the amount of each monthly repayment?

    16194.40
    $\div 24$
    $= \$674.80$

> Correctly calculated the deposit and the balance owing. Successfully calculated the simple interest on the balance

> Recognised that interest is added to the balance and that the number of years needed to be converted to months to calculate the repayments

Grade Commentary

Shane has demonstrated thorough knowledge and understanding of simple and compound interest. There was appropriate use of formulae to solve multi-step problems, with only minor errors. Shane has logically applied knowledge and understanding in calculating the monthly repayments when purchasing an item on terms. This work sample demonstrated characteristics of work typically produced by a student performing at grade B7 level.