Simple and Compound Interest

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

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

Used appropriate strategies to solve familiar multi-step problems. Recognised that depreciation decreases the value of an item

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

$$A = P(1-R)^N$$
$$A = 28\,000(1-0.09)^3$$
$$= \$21\,099.99$$

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.

$$A = P(1+R)^N$$
$$= 5000(1+0.03)^8$$
$$= \$6333.85$$

Correctly applied the compound interest formula when compounding at particular intervals

(b) Find the interest earned.

$$I = A + P$$
$$= 6333.85 - 5000$$
$$I = \$1333.85$$

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?

$$I = PRN$$
$$\frac{240}{0.04} = \frac{1500 \times 0.04 \times N}{0.04}$$
$$\frac{6000}{1500} = \frac{1500 \times N}{1500}$$
$$N = 4 \text{ years}$$

Correctly changed the subject of the simple interest formula in determining the number of years

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?

    $$\frac{12\ 400}{10} \times 1\dot{5}$$

    Deposit = $1860

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

    12 400 − 1860
    = $10 540

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

    $$I = PRN$$
    $$I = 10\ 540 \times \underset{0.015}{\cancel{0.018}} \times 24$$
    $$I = \$3794.40$$

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

    Total = 10 540 + 3794.4
    = $14334.40

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

    $$\frac{14\ 334.4}{\cancel{12}\ 24}$$
    = $597.27

Grade Commentary

Flynn has demonstrated thorough knowledge and understanding of simple and compound interest and has used appropriate formulae to solve multi-step problems, with a high degree of accuracy. Flynn 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.