Unit 5 Interest Review

\[ A = P(1 + i)^n \quad PV = A(1 + i)^{-n} \]

**Lesson 1 Simple Interest:** \( I = Prt \) Interest is calculated on the principal only.

1. Express the following rates as \( r \) in the simple interest formula.
   a) 7%  
   b) 30%

2. Express the following lengths of time as \( t \) in the simple interest formula.
   a) 2 months  
   b) 2 years

3. $300 is invested for 2 years at 6% simple interest. How much interest is earned? What is the final amount?

\[ I = Prt + \frac{I}{300} \times (0.06) \times 2 \]
\[ A = 300 + 36 \]
\[ A = 336 \]

4. What rate of simple interest is needed for $700 to double in 3 years?

\[ r = \frac{100}{300} \times (700 \times 3) \]
\[ r = 0.33 \]
\[ 33\% \]

**Lesson 2: Compound Interest Future Value** \[ A = P(1 + i)^n \]

5. A small business loan of $3000, at 9%, compounded monthly must be repaid after two years. How much must be repaid? How much interest was charged?

\[ i = 0.09 / 12 \]
\[ A = 3000 \times (1.0075)^{24} \]
\[ n = 2 \times 12 \]
\[ A = 3589.74 \]
\[ I = 589.24 \]

**Lesson 3: Compound Interest Present Value** \[ PV = A(1 + i)^{-n} \]

6. Lisa would like to have $5000 in five years old for a down payment on her car. How much does she need to invest, today at 6%, compounded monthly?

\[ i = 0.06 / 12 \]
\[ n = 5 \times 12 \]
\[ PV = 5000 \times (1.005)^{-60} \]
\[ PV = 3706.86 \]

**Lesson 4 and 5: TVM Solver**

7. Dave wants to double his $10 000 savings in 8 years. What quarterly interest rate will achieve this goal?

N=  
FV= 
PV= 
PMT= 
I% BEGIN
8. How long will it take to triple a $3000 investment that is earning 4.5% compounded monthly?

9. Sam has a $500 investment earning 2% compounded monthly. Pat’s $500 investment earns 2.5% compounded semiannually.
   a) After 5 years, who has more money?
   b) When they are ready to retire, in 40 years, who will have more money?