Engineer borrows $1,000 From the company credit union at 5% per year interest. the amount is to be paid back in one instalment after 3 years. what is the amount owed at the end of every year and the final loan value?
use both simple & compound interest

At end of year 1: $F = P(1+i)$

Loan value (balance) = $1,000((1+0.05) = \$1,050$

(Same For both simple & compound)

At end of year 2:

balance under simple interest: $1,050 + 50 = \$1,100$

" " compound interest: $1,050(1.05) = \$1,102.5$

$F = P(1+i)^2 = 1000 \cdot 1.05^2$

$F = P(1+2i)$

$(1000 + 50) * 0.05$

total interest = $52.5 = 0.05 * 1,000 + 50 * 0.05$

Interest on principal (50)

Interest on interest (2.5)

In year 3,

under

Simple interest:

Loan balance = 1,100 + 50 = 1,150

or $F = 1{,}000(1 + 3 * 0.05) = 1150$

→ $P(1+ni)$

under compound interest:

Loan balance = 1,102.5 * 1.05 = $1,157.63

or $F = P(1+i)^3$

$1000 \cdot 1.05^3$