Simple and reducible rates of interest

Traditionally, there are two main types of interest; simple (or flat or fixed rate) interest and reducing balance (reducible or effective) interest. Simple interest is no longer used for consumer loans, though you may come across it in private arrangements. It is important to understand the two different types, and why simple interest is less attractive for the borrower.

The formula to calculate simple interest is: I = PRN

I = simple interest
P = principal
R = interest rate per period as a decimal
N = number of payment periods

If somebody lends Tye $5000 at 5% flat rate (simple interest) and Tye agrees to pay them back each year for 5 years, we can use the simple interest formula to work out how much Tye will pay in interest.

Interest = $5000 \times 0{\cdot}05 \times 5$
Interest = $1250

Note that each year Tye is paying 5% of the original loan amount ($5000), and not 5% of the balance he still owes.

The Consumer Credit Code dictates that all consumer loans (housing, personal and credit card) must use reducible or effective interest rather than simple interest. This means that the interest is paid on the amount still owing, not on the original amount borrowed.

It is possible to work out what the reducing, or effective, rate of interest is on Tye's 5% fixed rate loan. To do this we use the formula:

$$E = \frac{2NR}{N+1}$$

E = the effective rate of interest per annum
R = the flat rate of interest per annum
N = the number of repayments in the loan

For Tye's 5% simple interest (fixed rate) loan the effective rate is:

$$E = \frac{2 \times 5 \text{ (repayments)} \times 5(\%)}{5 \text{ (repayments)} + 1}$$
$$= 8 \cdot 33\%$$

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Simple and reducible rates of interest (continued)

1. WORK OUT the amount the borrower will pay in interest for each of these fixed rate (simple interest) loans. Remember that the formula for calculating simple interest is:

$I = PRN$

a) $6000 to be repaid in monthly instalments over 4 years. Flat rate of interest is 8%.

b) A loan of $3500 at a flat rate of 7%, to be paid over 3 years.

c) A $500 loan to be paid back in 1 month at a flat rate of 15%.

2. Now, for each of the loans above, CALCULATE the effective rate of interest (the equivalent rate of reducible interest the borrower is paying over the term of the loan). The formula for determining effective rate of interest from simple interest is:

$$E = \frac{2NR}{N+1}$$

a)

b)

c)

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