

Interest, Debt and Compounding

10th Grade

The maths behind loans and savings — one formula pointing two ways.

Simple interest is charged only on the original amount. Compound interest is charged on the balance including previous interest.

$$A = P(1 + r/n)^{(nt)}$$

Simple: £1000 at 5% for 3 yrs

£1150

$I = P \times r \times t$. Interest never grows.

Compound: same, yearly

£1157.63

Each year earns on the new balance.

Over 30 years

£4321 vs £2500

The gap widens dramatically with time.

On a debt

it works against you

Credit card interest compounds monthly.

Compounding rewards starting early and punishes carrying debt. Same maths, opposite sides.