

6.8 Simple and Compound Interest

Interest: the money you are paid for putting money in the bank (or \$ borrowed)

Interest Rate: the percent used to calculate interest

Principal: the original amount deposited or borrowed

Simple Interest
is calculated only
on the Principal

Formula:

$$I = p \cdot r \cdot t$$

I: Interest
p: Principal (original \$)
r: Interest Rate (%) decimal
t: Time in years

Example 1.

A student deposits \$225 in an account.
The simple interest rate is 6.5% per
year. Find the interest earned over
four years.

$$I = p \cdot r \cdot t$$
$$= (225)(.065)(4)$$

$$I = \$58.50$$

$$p = 225$$
$$r = 0.065$$
$$t = 4$$

Example 2.

You deposit \$120 in an account that earns 5% simple interest. Find the final balance in the account after 3 years.

$$I = p \cdot r \cdot t$$
$$= (120)(.05)(3)$$

$$I = \$18$$

$$p = \$120$$
$$r = 0.05$$
$$t = 3$$

$$\text{Final Balance} = \$120 + \$18$$
$$= \text{\$138}$$

Example 3.

You deposit \$120 in an account that earns 5% interest compounded annually.

YEAR	START OF YEAR	INTEREST	END OF YEAR
1	\$120	$I = p \cdot r \cdot t$ $= 120 (.05)(1)$ $I = \$6$	\$126
2	\$126	$I = 126 (.05)(1)$ $I = \$6.30$	\$132.30
3	\$132.30	$I = (132.30)(.05)$ $I = \$6.62$	\$138.92



Compound Interest

is interest paid on the original principal and on any interest that has been left in the account.

Compound Interest Formula

$$B = p \cdot (1 + r)^n$$

B : Final Balance

p : principal

r : interest rate per year

n : # of years

P.E.M/D.A/S

Example 4

You have \$575 and decide to invest it for 4 years at an interest rate of 6.25% compounded annually. What will your final balance be?

$$\begin{aligned} B &= p \cdot (1 + r)^n \\ &= 575 (1 + .0625)^4 \\ &= 575 (1.0625)^4 \\ &= 575 (1.27) \\ \boxed{B} &= \boxed{\$ 730.25} \end{aligned}$$

$$\begin{aligned} p &= \$575 \\ r &= 0.0625 \\ n &= 4 \end{aligned}$$

$$\begin{array}{r} \text{Interest} = 730.25 \\ \underline{-575.00} \\ \hline \$155.25 \end{array}$$

Homework

p.344 #17-27 all, 30, 38

Show Work (formulas)