HOMEWORK...

Worksheet - Simple Interest.pdf

Worksheet Solutions - Simple Interest.pdf

Hw ???

3e) $I = \$500$

$P = \$10000$

$t = 2 \text{ yrs}$

$$r = \frac{500}{10000(2)} \times 100\%$$

$r =$

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500/(10000*2)
             .025
Ans*100
             2.5%
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$$I = \frac{P \cdot r \cdot t}{P t}$$

$$\frac{I}{Pt} = r$$

$$r = \frac{I}{Pt}$$

COMPOUND Interest...

Terminology Tango
Click on the picture to verify the match.

daily	once a year
bi-weekly	twice a year
semi-annually	four times a year
weekly	twelve times a year
monthly	26 times a year
quarterly	52 times a year
annually	365 times a year
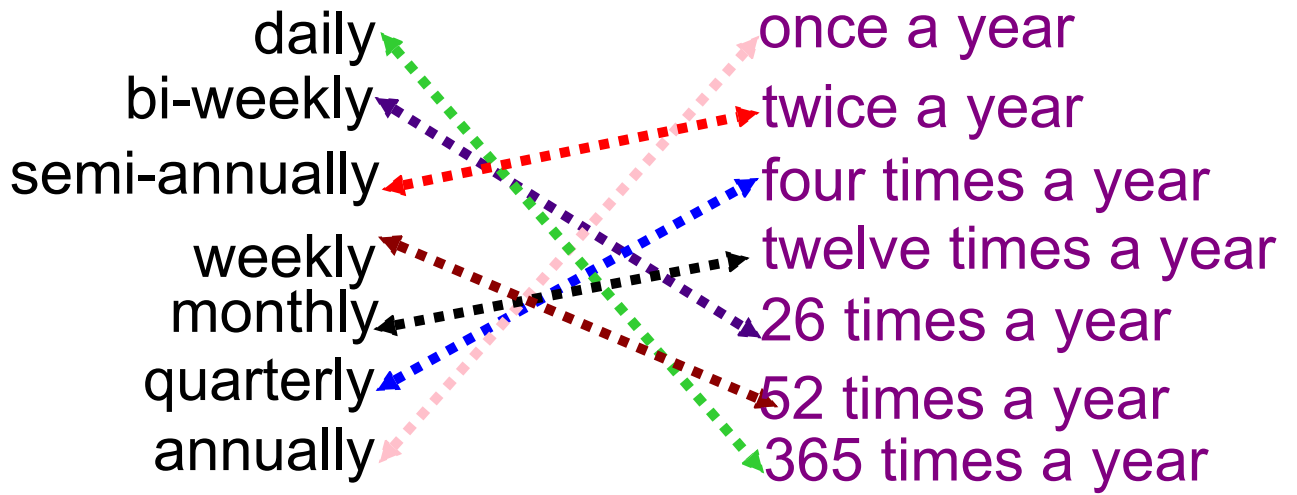
COMPOUND Interest

Interest is added to the principal periodically throughout the year. New interest may be paid on the principal plus the interest. The interest rate is stated per annum and is divided by the number of **compounding periods**.

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$I = A \text{ - } P$$

A = final value of the investment ...(principal + interest)
P = principal
r = annual interest rate
n = number of compounding periods in a year
t = term of the investment or loan in number of years

EXAMPLE #1: If $1000 is invested at 8 %/a compounded
$n = 2$ ⟵⟶ semi-annually for 2 years, how much will the
investment be worth?

Using the simple interest formula...

I = 1000(0.08)(6/12)
 = $40 (after 1st interest period)

New principal = 1000 + 40
  = $1040

I = 1040(0.08)(6/12)
 = $41.60   (after 2nd interest period)

New Principal = 1040 + 41.60
  = $1081.60

I = 1081.60(0.08)(6/12)
 = $43.26   (after 3rd interest period)

New Principal = 1081.60 + 43.26
  = $1124.86

I = 1124.86(0.08)(6/12)
 = $44.99   (after 4th interest period)

New Principal = 1124.86 + 44.99
  = $1169.85

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$= 1000\left(1 + \frac{0.08}{2}\right)^{2 \times 2}$$

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1000(1+0.08/2)^4
              1169.85856
■
```

EXAMPLE #2:

Calculate the final value of an initial investment of $6000.00. Interest is paid at 4% per annum, ==compounded semi-annually,== for three years.

A = final value of the investment ...(principal + interest)
P = principal
r = annual interest rate
n = ==number of compounding periods in a year==
t = term of the investment or loan in number of years

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$A = 6000\left(1 + \frac{0.04}{2}\right)^{(2)(3)}$$

$$A = 6000(1 + 0.02)^6$$

$$A = 6000(1.02)^6$$

$$A = 6000(1.1262)$$

$$A = \$6756.98$$

EX #3: Maggie invests $30 000 at 10% /a
compounded quarterly for 20 years.
Determine...

a) How much will this investment be worth?

b) How much interest did you earn?

a) $A = 30000\left(1 + \dfrac{0.10}{4}\right)^{4 \times 20}$

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30000(1+.10/4)^8
0
         216287.0345
```

$A =$

b) $I = A - P$

$= 216287.03$
$\quad\; 30000$
$-$
$\$186287.03$

EXAMPLE #4...

A keen MVHS student wants to save some money from their summe employment. They decide to take out a Canada Savings Bond which pays 2.5 % interest per year compounded monthly. If the student invests $850 into the bond, how much interest will they earn if they don't touch the money for 3 years?

$$A = 850\left(1+\frac{0.025}{12}\right)^{12 \times 3}$$

$$A = \$916.13$$

$$I = 916.13 - 850$$

$$I = \$66.13$$

HOMEWORK...

Worksheet - Introduction to Compound Interest.doc

Attachments

Worksheet - Simple Interest.pdf

Worksheet Solutions - Simple Interest.pdf

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