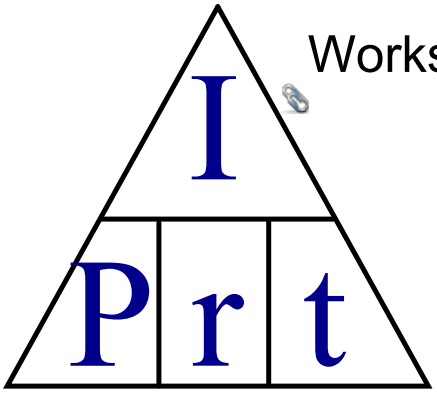
PRACTICE rearranging... I = Prt



Worksheet - Rearranging Simple Interest.pdf

When finished...PRACTICE rate of return (ROR)

Text p. 452: #3 & #12

3. a) Principal of $1000 is invested at 5% simple interest, paid annually, for 5 years. What is the rate of return?

b) Which option below would yield the greatest future value? What is the rate of return for this option?

A. increasing the principal to $1050
B. increasing the interest rate to 6%
C. paying interest every 6 months ← no change
D. increasing the term to 6 years

$ROR = \frac{I}{P} \times 100\%$

a) $I = 1000(0.05)(5)$

$I = \$250$

$ROR = \frac{250}{1000} \times 100\%$

$= 25\%$

b)

a) 1050(.05)(5) 262.5
b) 1000(0.06)(5) 300
d) 1000(0.05)(6) 300

$ROR = \frac{300}{1000} \times 100\%$

$= 30\%$

12. Lin invested \$4700. After 8 years, the investment's value was \$9400.

a) What was the annual simple interest rate?

b) Suppose that the interest rate continued for another 8 years. What would be the value of the investment?

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

$= \frac{4700}{4700(8)}$

$= 12.5\%$

b) $A = P + Prt$

$= 4700 + 4700(0.125)(16)$

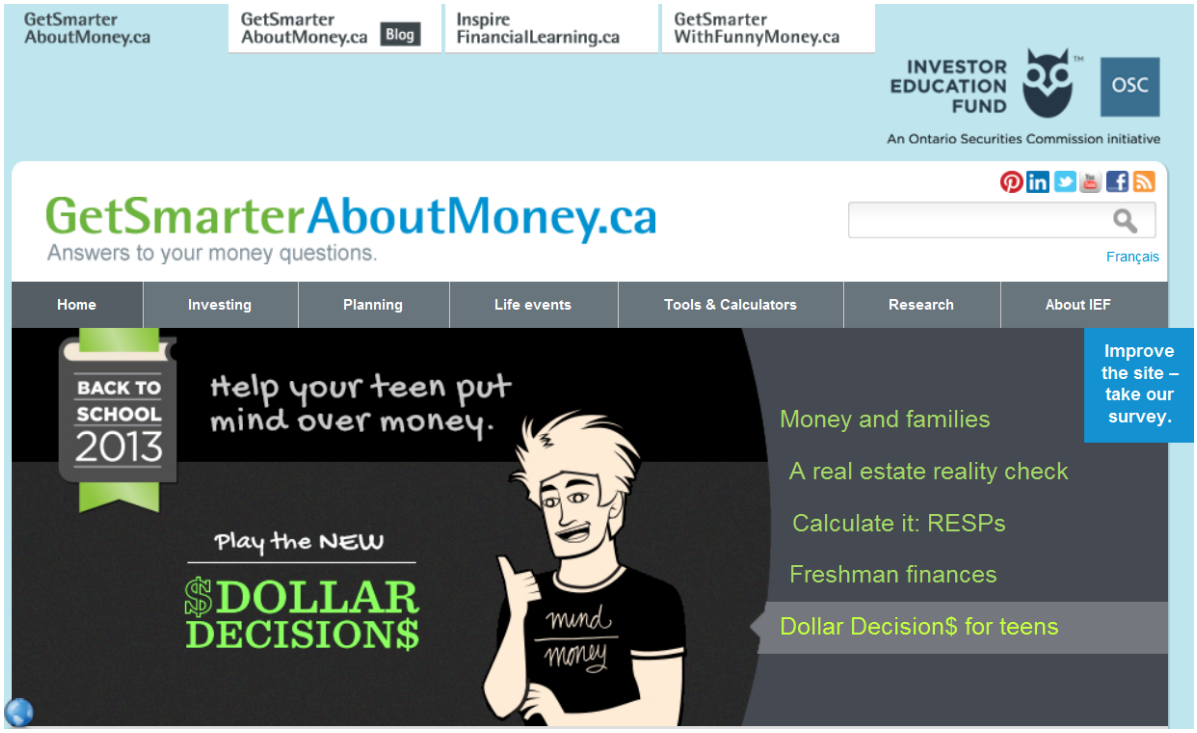
$= \$14100$

$I = A - P$

$= 9400 - 4700$

$= 4700$

$$$ Questions...great website for answers!!!



8.3 Compound Interest: Future Value

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

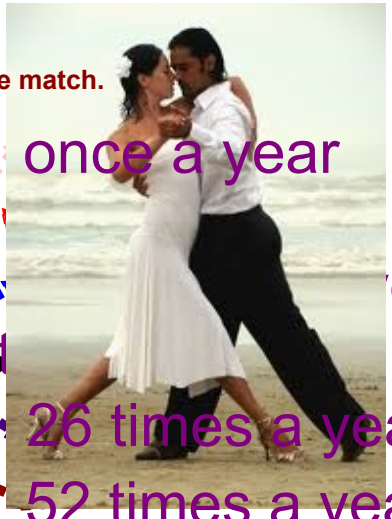
GOAL

Determine the future value of an investment that earns compound interest.

Terminology T

Click on the picture to verify the match.

daily
bi-weekly
semi-annually
weekly
monthly
quarterly
annually



once a year
ear
year
26 times a year
52 times a year
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**.

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

$$I = A - P$$

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 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

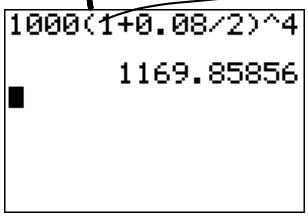
I = 1081.60(0.08)(6/12)
= $43.26 (after 3rd interest period)

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

Compound Interest



Compound Interest Formula...

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

SAME ANSWER?

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

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

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

```
6000(1+0.04/2)^6
      6756.974516
```

EX #3: Mr. Hallihan invests $59 000 at 4.5% /a compounded quarterly for 23 years. Determine...

a) How much will this investment be worth?

b) How much interest did you earn?

a)

```
59000(1+0.045/4)
^92
      165134.2646
```

b) $I = A - P$

```
59000(1+0.045/4)
^92
      165134.2646
Ans-59000
      106134.2646
```

EXAMPLE #4...

A keen MVHS student wants to save some money from their summer 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(1+0.025/12)^
36
      916.1300521
Ans-850
      66.13005205
```

I =

HOMEWORK...

p. 457: #1, 2

p. 468: #2, 6, 7

Simple

I = Prt

&

A = P + I

A = P + Prt

A= P(1 + rt)

Compound

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

$$I = A - P$$

Practice With Compound Interest...

Worksheet - Introduction to Compound Interest.doc

Worksheet Solutions - Compound Interest.pdf

Attachments

Worksheet - Rearranging Simple Interest.pdf

Worksheet - Simple Interest.pdf

Worksheet - Introduction to Compound Interest.doc

Worksheet Solutions - Compound Interest.pdf