# **HOMEWORK...**

p. 457: #1, 2

p. 468: #2, 6, 7

## **Simple**

$$A = P + I$$

$$A = P + Prt$$

$$A = P(1 + rt)$$

## **Compound**

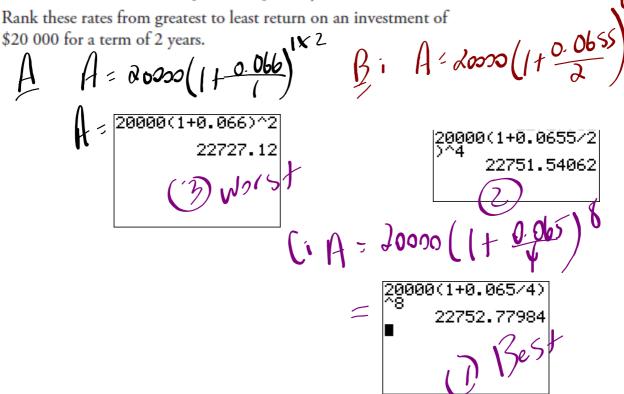
$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$I = A - P$$

. .

7. Suppose that you are searching online for the best interest rates on a GIC. You find these rates:

- Bank A offers 6.6%, compounded annually.
- Bank B offers 6.55%, compounded semi-annually.
- Bank C offers 6.5%, compounded quarterly.



#### EXAMPLE 4 p. 463

#### Comparing interest on investments with different compounding periods

Céline wants to invest \$3000 so that she can buy a new car in the next 5 years. Céline has the following investment options:

A. 4.8% compounded annually

B. 4.8% compounded annually

B. 4.8% compounded semi-annually

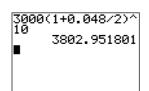
C. 4.8% compounded monthly

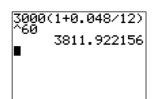
D. 4.8% compounded weekly

E.) 4.8% compounded daily



3000(1+0.048/1)^ 5 3792.518151





3000(1+0.048/52) ^(52\*5) 3813.325288

3000(1+0.048/365 )^(365\*5) 3813.687273

## **Present Value...**

\$ needed to invest NOW to get a fixed amount later

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

#### Rule of 72

A simple formula for estimating the doubling time of an investment; 72 is divided by the annual interest rate as a percent to estimate the doubling time of an investment in years.

The Rule of 72 is most accurate when the interest is compounded annually.

p. 465

#### EXAMPLE 5 Estimating doubling times for investments

Both Berta and Kris invested \$5000 by purchasing Canada Savings Bonds. Berta's CSB earns 8%, compounded annually, while Kris's CSB earns 9%, compounded annually.

a) Estimate the doubling time for each CSB.

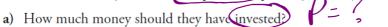
## **Compound Interest: Present Value**

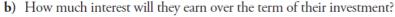
#### **GOAL**

Determine the principal or present value of an investment, given its future value and compound interest rate.

EXAMPLE 2 Determining the present value of an investment that p. 475 is compounded quarterly

Agnes and Bill are musicians. They have researched the costs to set up a small recording studio. They estimate that \$40 000 will pay for the soundproofing, recording equipment, and computer hardware and software that they need. They plan to set up the studio in 3 years and have invested money at 9.6%, compounded quarterly, to save for it.







which interest will they earn over the term of their investment?

$$V = \frac{A}{(1+6)} \text{ At}$$

$$V = \frac{40000 \times (1+0.096/4)}{30092.65538}$$

$$V = \frac{40000 \times (1+0.096/4)}{30092.65538}$$

### **HOMEWORK...**

p. 468: **Rule of 72...** 

#3 (only estimate the doubling time)

#5a & #8

**Compound Interest (Future Value)** 

#10 & #12

p. 478: Compound Interest (Present Value)

#4, #6, #7, & #9