

Compound Interest Warm-Up # 2 (on the small handout)

1. Find i , the interest rate per compounding period,
and n , the number of compounding periods for each:

a) 4% per year for 7 years,
compounded semi-annually

$$i = \frac{0.04}{2}$$

$$n = 7 \times 2 \\ = 14$$

b) 6% per year for 5 years,
compounded monthly

$$i = \frac{0.06}{12}$$

$$n = 5 \times 12 \\ = 60$$

c) 8% per year for 3 years,
compounded quarterly

$$i = \frac{0.08}{4}$$

$$n = 3 \times 4 \\ = 12$$

2. Calculate the amount of a \$1000 investment that was invested at 6% per year, compounded semi-annually for 2 years.

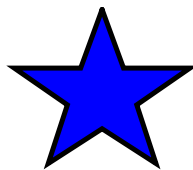
$$A = ?$$

$$P = 1000$$

$$i = \frac{0.06}{2}$$

$$n = 2 \times 2 \\ = 4$$

$$A = P(1+i)^n \\ = 1000(1 + \frac{0.06}{2})^4 \\ \doteq 1125.508 \\ \doteq \$1125.51$$



3. Solve for P.

$$a) \frac{15}{2} = \frac{P(2)}{2}$$

$$7.5 = P$$

$$b) \frac{15}{2^3} = \frac{P(2)^3}{2^3}$$

$$\frac{15}{8} = P$$

$$1.875 = P$$



Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) calculate the present value of an investment.

*This means we want to calculate how much money we need now, (the **present value**), if we know how much we want/need at the end (the **future value**).*

MBF 3CI

Present Value



Date:

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<p>We will still use the formula:</p> $A = P(1+i)^n$ <p>A is the final amount</p> <p>P is the principal (original amount)</p> <p>n is the number compounding periods</p> <p>i is the interest rate <u>per</u> compounding period</p>	<p>It is sometimes written with different variables:</p> $FV = PV(1+i)^n$ <p>FV is the Future Value (the final amount you will owe, or receive)</p> <p>PV is the Present Value (the money invested or borrowed NOW)</p> <p>n is the number compounding periods</p> <p>i is the interest rate <u>per</u> compounding period</p>
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Ex.1 Abi and Niera plan to invest some money on the birth of their daughter, so that there will be \$10 000 on her 16th birthday.

They will invest their money at 8%/a, compounded semi-annually.

- a) How much do they need to invest today? b) How much interest will their investment earn?

$$A = P(1+i)^n$$

$$A = 10\,000$$

$$P = ?$$

$$10\,000 = P \left(1 + \frac{0.08}{2}\right)^{32}$$

$$\frac{10\,000}{\left(1 + \frac{0.08}{2}\right)^{32}} = \frac{P \left(1 + \frac{0.08}{2}\right)^{32}}{\left(1 + \frac{0.08}{2}\right)^{32}}$$

$$i = \frac{0.08}{2}$$

$$n = 16 \times 2$$

$$= 32$$

$$P = \frac{10\,000}{\left(1 + \frac{0.08}{2}\right)^{32}}$$

$$\approx 2850.579$$

$$\approx \$2850.58$$

$$A = P + I$$

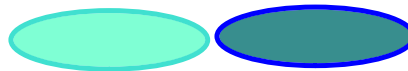
$$I = A - P$$

$$\approx 10\,000 - 2850.58$$

$$\approx \$7149.42$$

their investment earned
\$ 7149.42 in interest.

they need to invest \$ 2850.58 now,
to have \$10 000 on her 16th birthday.



In your notebook, complete:

Last Day's Work pp. 432-434 #2, 3, 6, 8, 12, 15, if it is not already complete.

Check your answers with the textbook answers as you work. Ask for help if they don't match.

Present Value: pp. 439-441 #2ab, 4, 6, 7, 9, 10, 13, 16a (Be prepared for SWYK 8.1).