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.

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

$A = ?$

$P = 1000$

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

$n = 2 \times 2 = 4$

$= 1000\left(1 + \frac{0.06}{2}\right)^4$

$\doteq 1125.508$

$\doteq \$1125.51$

$1125.51

3. Solve for P.

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

$\frac{15}{2} = P$

$7.5 = P$

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

$1.875 = P$

a) P=7.5 b) P=1.875

Before we begin, are there any questions from last day's work?

Today's Learning Goal(s):

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

a) calculatethe 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).*

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We will still use the formula:	**It is sometimes written with different variables:**
$A = P(1+i)^n$	$FV = PV(1+i)^n$
A is the final amount	FV is the Future Value (the final amount you will owe, or receive)
P is the principal (original amount)	PV is the Present Value (the money invested or borrowed NOW)
n is the number compounding periods	n is the number compounding periods
i is the interest rate **per** compounding period	i is the interest rate **per** compounding period

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* (*per annum*), compounded semi-annually.

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

$A = 10\,000$ $A = P(1+i)^n$

$P = ?$ $10000 = P\left(1+\frac{0.08}{2}\right)^{32}$

$i = \frac{0.08}{2}$ $\frac{10000}{(1+\frac{0.08}{2})^{32}} = P$

$n = 16 \times 2$ $P \doteq 2850.579$

$= 32$ $= \$2850.58$

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

$A = P + I$

$I = A - P$

$= 10000 - 2850.58$

$= 7149.42$

their investment earned $ 7149.42 in interest.

a) $2850.58 b) $7149.42

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)**.