Name: _____ Date: _____

Amount	A	full amount of the loan or investment at the end of the term
Interest	I	The money earned (by you or bank) investment bank
Principle	P	The initial amount of money invested or loaned
Rate	r	interest rate (used as a decimal)
Term	t	length of the investment / loan
Compounding Period	n	how often interest is added

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

nt: # of times interest is added over the term

1 + : maintaining Principle

r/n: Interest added eat compounding period

1. Find the compounded amount if you were to put $400 in a bank account if the interest rate is 4.75% for 5 years and the interest is compounded weekly.

A	?
I	X
P	400
r	4.75%
t	5
n	52

$4.75\% = \frac{4.75}{100} = 0.0475$

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

$$= 400\left(1 + \frac{0.0475}{52}\right)^{52 \times 5}$$

$$= 400\left(1 + 0.000913\right)^{260}$$

$$= 400(1.000913)^{260}$$

carry lots of decimal places

$$= 400(1.26794)$$

$$= \$507.18$$

money - 2 decimal places.

Assignment Finish This Handout Quiz: Next Day!

2. Margaret invested $2000 in an account with an interest rate of 8% for 3 years, compounded quarterly. How much interest does she earn?

A	
I	?
P	2000
r	8%
t	3
n	4

$= \frac{8}{100} = 0.08$

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

$= 2000\left(1+\frac{0.08}{4}\right)^{4\times 3}$

$= 2000(1+0.02)^{12}$

$= 2000(1.02)^{12}$

$= 2000(1.2682)$

$= 2536.48$

$A = P + I$

$2536.48 = 2000 + I$

$-2000 \quad -2000$

$I = \$536.48$

3. Calculate the final amount of a deposit of $5000 invested at 3.1% per year, compounded annually for 5 years.

A	?
I	X
P	5000
r	3.1%
t	5
n	1

$= \frac{3.1}{100} = 0.031$

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

$= 5000\left(1+\frac{0.031}{1}\right)^{1\times 5}$

$= 5000(1+0.031)^{5}$

$= 5000(1.031)^{5}$

$= 5000(1.1649)$

$= \$5824.56$

4. Calculate the final amount of a deposit of $650 invested at 4.75% per year, compounded monthly for 3 years.

A	?
I	
P	650
r	4.75%
t	3
n	12

$= \frac{4.75}{100} = 0.0475$

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

$= 650\left(1+\frac{0.0475}{12}\right)^{12\times 3}$

$= 650(1+0.003958)^{36}$

$= 650(1.003958)^{36}$

$= 650(1.1528)$

100% 15.28%

$= \$749.34$

1. Calculate the final amount of a deposit of $1000 invested at 1.25% per year, compounded semi-annually for 2 years.

A	?
I	X
P	1000
r	1.25%
t	2
n	2

$= \frac{1.25}{100} = 0.0125$

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

$= 1000\left(1+\frac{0.0125}{2}\right)^{2\times 2}$

$= 1000(1+0.00625)^4$

$= 1000(1.00625)^4$

$= 1000(1.02524)$

$= \$1025.24$

2. Tabitha deposits $4275 into an investment account that offers 3.25% interest per year, compounded daily. How much will her investment be worth after 7 years?

A	?
I	X
P	4275
r	3.25%
t	7
n	365

$= \frac{3.25}{100} = 0.0325$

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

$= 4275\left(1+\frac{0.0325}{365}\right)^{365\times 7}$

$= 4275(1+0.0000890)^{2555}$

$= 4275(1.0000890)^{2555}$

$= 4275(1.25544)$

$= \$5367.03$

3. Calculate how much *interest* you would owe on a loan of $8500 at 2.75%, compounded quarterly, for a term of 4 years.

A	
I	?
P	8500
r	2.75%
t	4
n	4

$= \frac{2.75}{100} = 0.0275$

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

$= 8500\left(1+\frac{0.0275}{4}\right)^{4\times 4}$

$= 8500(1+0.006875)^{16}$

$= 8500(1.006875)^{16}$

$= 8500(1.115858)$

$= 9484.79$

$A = P + I$

$9484.79 = 8500 + I$

$-8500 \quad -8500$

$I = \$984.79$