Date: _____

Today's Learning Goal(s):

By the end of the class, I will be:

a) ready for the Unit 8 Summative.

Correct: pp. 520-521 #1, 2b, 3ac, 5, 7
pp. 534-535 #1 – 15, 17 ~9
p. 536 #1 – 3 [5]

Today's Homework Practice includes:

Be fully prepared for

Thursday's **Unit 8 Summave** !

Formulae

Simple Interest

$I = Prt$

$A = P(1 + rt)$

Annuity

$$S_n = \frac{a(r^n - 1)}{r - 1}$$

Compound Interest

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

$P = \frac{A}{(1 + i)^n}$ Present Value

$A = P + I$

$I = A - P$

Future Value

$$FV = \frac{R\left[(1+i)^n - 1\right]}{i}$$

Present Value

$$PV = \frac{R\left[1-(1+i)^{-n}\right]}{i}$$

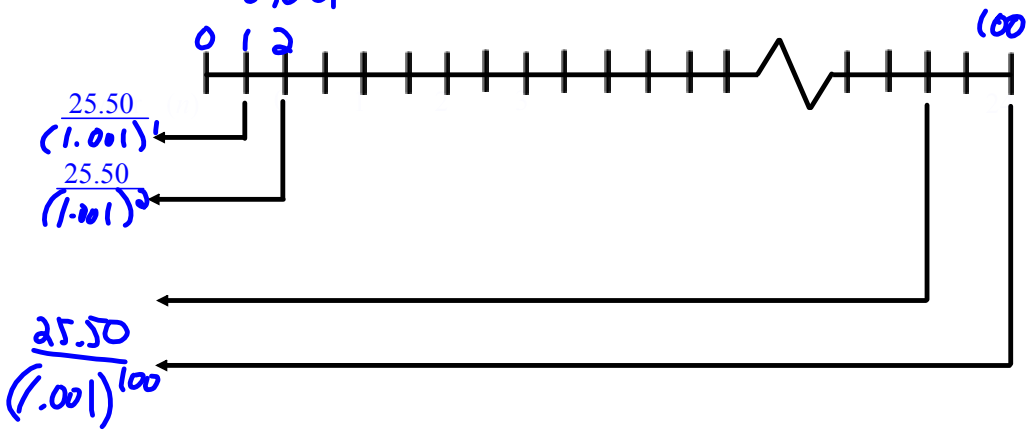
p. 520 #3c

3. Calculate the present value of each annuity.

K

	Regular Payment	Rate of Compound Interest per Year	Compounding Period	Time
a)	$5000 per year	7.2%	annually	5 years
b)	$250 every 6 months	4.8%	semi-annually	12 years
c)	$25.50 per week	5.2%	weekly	100 weeks

$i = \frac{0.052}{52} = 0.001$ $n = 100$



$a = \frac{25.50}{(1.001)^{100}}$ $r = 1.001$ $n = 100$

$S_n = \frac{a(r^n - 1)}{r - 1}$

$S_{100} = \frac{\frac{25.50}{(1.001)^{100}}(1.001^{100} - 1)}{1.001 - 1}$

$1.001 - 1 = 0.001$

$\doteq 2425.492$

$\doteq \$2425.49$

c) $R = 2550$
$i = 0.001$
$n = 100$

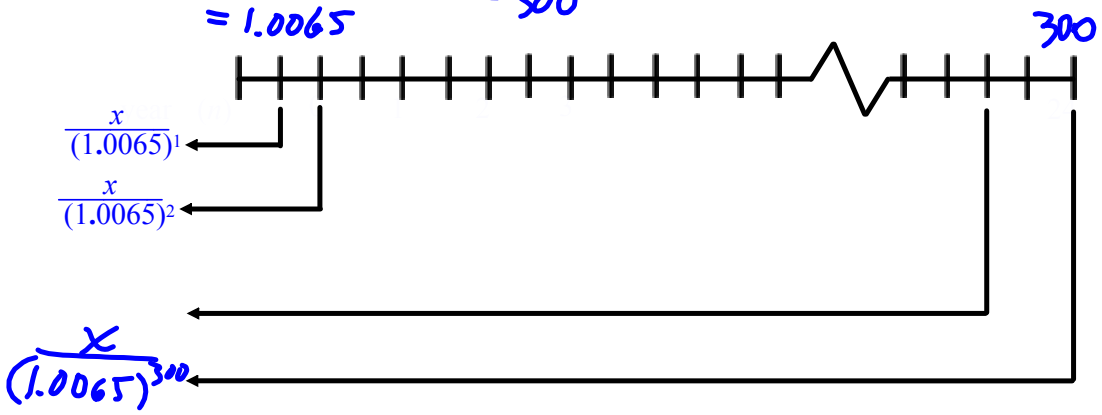
$$PV = R \times \left(\frac{(1 - (1 + i)^{-n})}{i}\right)$$

$$PV = 25.50 \times \frac{1 - 1.001^{-100}}{0.001} = \$2425.49$$

p. 521 #7

7. Emily is investing $128 000 at 7.8%/a compounded monthly. She wants to withdraw an equal amount from this investment each month for the next 25 years as spending money. What is the most she can take out each month?

$i = \frac{0.078}{12} = 1.0065$ $n = 25 \times 12 = 300$ $S_{300} = 128\,000$



$S_n = \frac{a(r^n - 1)}{r - 1}$ $S_{300} = 128\,000$, $a = \frac{x}{(1.0065)^{300}}$ $r = 1.0065$

$$128000 = \frac{\frac{x}{(1.0065)^{300}}\left(1.0065^{300} - 1\right)}{1.0065 - 1}$$

$$128000(0.0065) = \frac{x}{(1.0065)^{300}}\left(1.0065^{300} - 1\right)$$

$$128000(0.0065)(1.0065)^{300} = x\left(1.0065^{300} - 1\right)$$

$$\frac{128\,000(0.0065)(1.0065)^{300}}{\left(1.0065^{300} - 1\right)} = x$$

$x \doteq 971.026$

$\doteq \$971.03$

7. $128\,000 = R \times \frac{1 - 1.0065^{-300}}{0.0065}$

$R = \$971.03$

p. 534 #9

9. Roberto financed a purchase at 9.6%/a compounded monthly for 2.5 years. At the end of the financing period, he ~~still~~ owed $847.53. How much money did Roberto borrow?

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

$A = 847.53$

$P = ?$

$i = \frac{0.096}{12}$

$n = 2.5 \times 12$

$= 30$

$847.53 = P\left(1 + \frac{0.096}{12}\right)^{30}$

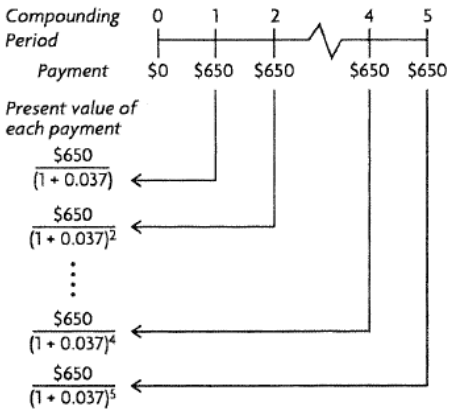
$\frac{847.53}{\left(1 + \frac{0.096}{12}\right)^{30}} = P$

$P = 667.327$

$\approx \$667.33$

8.5 Annuities: Present Value, pp. 520–522

1. a) i) There are 5 payments: $i = 3.7\%/a$ compounded annually



ii) $PV = 650(1.037)^{-1} + 650(1.037)^{-2} + 650(1.037)^{-3} + \cdots + 650(1.037)^{-5}$

iii) $PV = 650 \times \dfrac{1 - 1.037^{-5}}{0.037} = \$2918.24$

$PV = \frac{650}{1.037^5} + \frac{650}{1.037^4} + \frac{650}{1.037^3} + \frac{650}{1.037^2} + \frac{650}{1.037^1}$

$a = \frac{650}{1.037^5}$ $r = 1.037$