HOMEWORK Questions?

Test *TOMORROW...

PRACTICE QUESTIONS...

p. 509:

Formulas...#1, 2a, 3, 4, 6, 7a

TVM-Solver...#8, 9, 10

p. 506: Self Test

p. 483: Mid-Chp Review

- Simple Interest

$$I = \Pr t \qquad A = P + \Pr t$$
$$A = P + I \qquad A = P(1+rt)$$

- Compound Interest

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

- Rate of Return - ~~Rule of 72~~

$$ROR = \frac{earn}{invested} \times 100\%$$
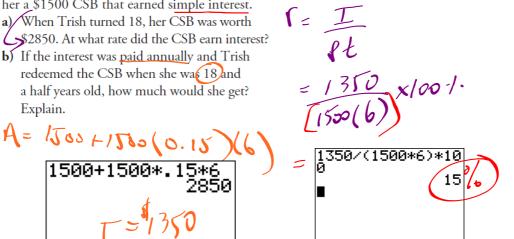
$$doubling\ time = \frac{72}{rate}$$

- Present Value

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

 - Regular Payments (TVM-Solver)

```
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT:END BEGIN
```

1. When Trish was 12, her grandmother bought *a)* $I = Prt \implies$
   her a $1500 CSB that earned <u>simple interest</u>.
   a) When Trish turned 18, her CSB was worth
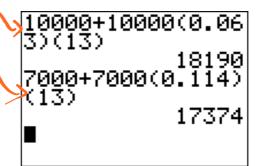 $2850. At what rate did the CSB earn interest?
   b) If the interest was <u>paid annually</u> and Trish
   redeemed the CSB when she was (18) and
   a half years old, how much would she get?
   Explain.

Handwritten:
$$I = Prt \implies \frac{I}{Prt}$$

$$r = \frac{I}{Pt}$$

$$= \frac{1350}{[1500(6)]} \times 100\%$$

$$A = 1500 + 1500(0.15)(6)$$

```
1500+1500*.15*6
              2850
```

$$I = \$1350$$

```
1350/(1500*6)*10
0
              15%
```

(circled 15%)

2. Steve is celebrating his 18th birthday.
   - On his 5th birthday, his grandmother bought
     him a $10 000 GIC that earns 6.3% simple
     interest.
   - On the same birthday, his grandfather bought
     him a $7000 CSB that earns 11.4% simple
     interest.

```
10000+10000(0.06
3)(13)
              18190
7000+7000(0.114)
(13)
              17374
```

   a) What is the value of each investment now?
   b) Graph both investments on the same grid
      to show how the values of the investments
      change over time.
   c) What conclusion can you draw from
      comparing the graphs?

3. Examine these two investments, and then
   answer the questions below.
   - Sonia invested in a $2000 GIC that earns 6.2%
     simple interest, paid annually, for 5 years.
   - Trent bought a $2000 GIC that earns 5.3%,
     compounded monthly, for a 5-year term.
   a) Predict which investment will have the
      greater rate of return. Explain.
   b) Verify your prediction.
   c) Explain the difference in the interest earned
      on the two investments.

Trent   *Sonia*

```
2000+2000(0.062)
(5)
              2620
2000(1+0.053/12)
^60
         2605.341315
```

Higher Rate → More interest.

4. James and Johnny received equal inheritances of
   $2000, which they invested for 5 years at 7.4%.
   James's account compounded semi-annually,
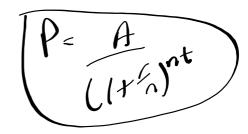   and Johnny's account compounded weekly.
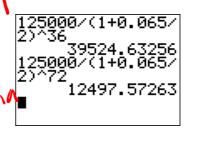   a) Predict who will earn more interest. Verify
      your answer. *Weekly*
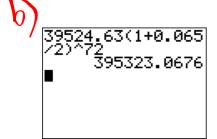   b) Compare their rates of return.

a) — *semi-annual*
— *weekly*

```
2000(1+0.074/2)^
10
       2876.189918
2000(1+0.074/52)
^260
       2894.707764
```

```
2000(1+0.074/52)
^260
       2894.707764
876.19/2000*10
       4.38095
Ans*10
   43.8095   %
```

```
894.71/2000*100
   44.7355  %
```

---

6. Phil and his daughter Lina opened accounts at
   different times. Each account earned 6.5%,
   compounded semi-annually.
   • Phil kept his account for 18 years and now
     has $125 000 in the account.
   • Lina kept her account for 36 years and now
     has $125 000 in the account.   ?
   a) Who invested the greater principal? How
      much more did he or she invest?
   b) If Lina had invested the same principal as
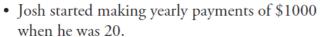   Phil, what would be the future value of her
      account after 36 years?

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

a) phil

```
125000/(1+0.065/
2)^36
       39524.63256
125000/(1+0.065/
2)^72
       12497.57263
```

Lina

b)

```
39524.63(1+0.065
/2)^72
       395323.0676
```

```
39524.63-12497.5
7
       27027.06
```

More Phil

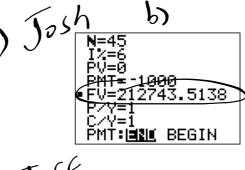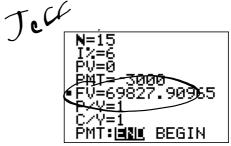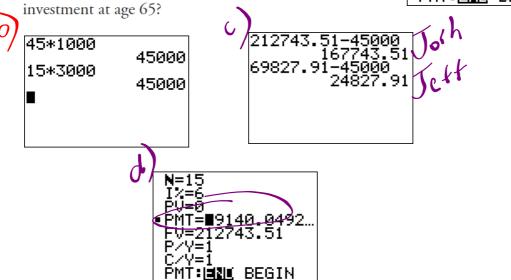**9.** Two brothers, Josh and Jeff, held investments that earned 6%, compounded annually. Both of them made regular payments into their investments until they were 65.
- Josh started making yearly payments of $1000 when he was 20.
- Jeff did not start until he was 50, but made annual deposits of $3000.

a) What is the future value of each investment?

b) How much did each man invest altogether?

c) How much interest did each man earn?

d) What annual deposit would Jeff have needed to make if he had wanted his investment to have the same future value as Josh's investment at age 65?

a) Josh   b)

```
N=45
I%=6
PV=0
PMT=-1000
FV=212743.5138
P/Y=1
C/Y=1
PMT:END BEGIN
```

Jeff

```
N=15
I%=6
PV=0
PMT=-3000
FV=69827.90965
P/Y=1
C/Y=1
PMT:END BEGIN
```

b)

```
45*1000
           45000
15*3000
           45000
■
```

c)

```
212743.51-45000
          167743.51     Josh
69827.91-45000
          24827.91      Jeff
```

d)

```
N=15
I%=6
PV=0
PMT=■9140.0492...
FV=212743.51
P/Y=1
C/Y=1
PMT:END BEGIN
```

Foundations of Math 11 - Investing Money Formulas

Simple Interest

$$I = \text{Pr}\,t \qquad A = P + \text{Pr}\,t$$
$$A = P + I \qquad A = P(1 + rt)$$

Compound Interest

Rule of 72

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

$$doubling\ time = \frac{72}{rate}$$

Rate of Return

$$ROR = \frac{earn}{invested} \times 100\%$$

Present Value

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

Regular Payments (TVM-Solver)

```
N=
I%=
PV=
PMT=
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C/Y=
PMT:END BEGIN
```

PRACTICE TIME... *✗ Survey on p.16*

- Mid Chapter Review: Read p. 481 - 482

    Do #1 - 8 on p. 483

- Chapter Review: Read p. 507 - 508

    Do #1 - 12 on p. 509

- Sample Test??? p. 506 #1 - 4