

Midterm #2 Financial Functions Practice #1 Annotated Answers

REMEMBER: Ignore negatives and round answers to the nearest dollar; will explain why in subsequent weeks.

If you understand these problems, you'll do great on the midterm.

#1 Output = FV "how much will have been saved at retirement" **NOTICE: PER year = PMT**
(\$425,487.03)

Inputs: n = 45 (70-25); PMT = \$2,000 ("per year"); rate = 6% PV = 0 ("no savings")

#2 BOTH Output = PV "Present Value of Option One"

OPTION ONE Inputs: PMT = \$30,000 ("per year"); n = 10; rate = 6% **NOTICE: PER year = PMT**
(\$220,802.61)

OPTION TWO Inputs: FV = \$450,000 "lump sum in 12 years"; n = 12; rate = 6%
(\$223,636.21)

OPTION TWO HAS A HIGHER PRESENT VALUE & IS THE BEST OPTION.

#3 Output = PMT "monthly payment" **REMEMBER: FOR ALL LOANS, DO MONTHLY**
(\$1,794.26)

Inputs: PV = \$350,000 (loan amount); rate = 4.6%/12; n = 30*12

#4 Output = PMT ". . . must be saved each year . . ." **NOTICE: EACH YEAR = PMT**
(\$2,985.07)

Inputs: FV = \$1,000,000 ("savings goal"); n = 45 (75 - 30); PV = \$7,000 ("presently have savings of");
rate = 7%.

#5 Output = PV "how much should an investor pay"

NOTE: INVESTMENT VALUES = PV

(\$21,979.73)

Inputs: FV = \$20,000 (face value); PMT = \$1,200 per year; rate = 5%; 14 years

#6 Output = PV "how much should an investor pay"

NOTE: INVESTMENT VALUES = PV

(\$36,534.51)

Inputs: FV = \$50,000 (face value); rate = 4.0%; 8 years

#7 Output = PV "how much can you borrow", loan amount

(\$518,045.88)

Inputs: PMT = \$95,000 per year * 32% / 12;
rate = 4.2%/12; n = 30*12

**NOTE: *32% allocates annual income to annual payment
Dividing by 12 converts annual payment to monthly payment**

#8 Output = PMT ("must be saved each year")

NOTICE: EACH YEAR = PMT

(\$5,405.57)

Inputs: FV = \$1,150,000 ("savings goal"); rate = 6%; n = 45 (75-30)

#9 Output = FV "will have been saved at retirement"

Note: Student loan is a liability, input as negative value

\$104,908.78

Inputs: PMT = \$3,600 ("per year"); PV = -\$55,000 ("student loan"); rate = 7%; n = 40 (70 - 30)

#10 Output = NPV ("net present value")
 \$922,210.57
 Input: Year One \$80,000
 Year Two \$85,000
 Year Three \$93,000
 Year Four \$914,000
 Rate = 7%

**4th year income includes income from operations of \$94,000
 + \$820,000 from proceeds of selling property = \$914,000**

#11 Output = IRR ("internal rate of return")
 7.7%
 Input: Year 0 -\$900,000
 Year One \$80,000
 Year Two \$85,000
 Year Three \$93,000
 Year Four \$914,000

**Note: Before the clock starts (time 0), you buy the property for \$900,000.
 Input the purchase price as a negative number, \$ going out .**

**BE SURE TO ROUND % ANSWER TO NEAREST TENTH
 NO input required for "Guess" in function box.**

	Year 1	Year 2	Year 3
Annual Gross Income	\$168,000	\$176,400	\$185,220
Vacancy & Collection Loss (7%)	\$11,760	\$12,348	\$12,965
Annual Effective Gross Income	\$156,240	\$164,052	\$172,255
Annual Expenses	\$40,000	\$42,000	\$44,100
Annual Net Income	\$116,240	\$122,052	\$128,155

**Increase each year gross income 5% by multiplying by 1.05
 Multiply each year annual gross income by 7%
 Subtract vacancy figure from annual gross income for each year
 Increase each year expenses 5% by multiplying by 1.05
 Subtract expense figure from effective gross income for each year**