

n years = n
 r rate
 PMT

n PV WNY n FV **Financial Functions Practice #2**

Lumpsum = FV

<p>1. You are <u>twenty years old</u> and currently have <u>no savings</u>. You plan to retire at age <u>55 years</u>. If you start to save <u>\$3,500 per year</u> at age 20, how much will have been saved at retirement? Assume you will earn a <u>5%</u> return on your savings. $n = 55 - 20$ rate = 5% $PMT = 3,500$ $n = 30$ $PV = 0$ FV</p>	<p>1. FV <u>\$ 316,121</u></p>
<p>2. Your client has been offered two options for the settlement of a dispute with his insurance company. You must help him to choose the option with the highest present value.</p> <p>Option One: <u>\$45,000 per year</u> for <u>7 years</u> $n = 7$ rate = 7% $PMT = 45,000$</p> <p>Option Two: <u>\$600,000</u> paid in a <u>lump sum</u> in <u>10 years</u>. $n = 10$ rate = 7% Assume an annual rate of return of <u>7%</u>. $FV = 600,000$</p> <p>2A. <u>Present Value</u> of Option One 2B. <u>Present Value</u> of Option Two 2C. Which option should the client choose?</p>	<p>2A. PV <u>\$ 242,518</u></p> <p>2B. PV <u>\$ 305,010</u></p> <p>2C. <u>Option 2</u></p>
<p>3. You qualify for a home loan of <u>\$450,000</u> at an annual interest rate of <u>3.7%</u> and a loan term of <u>30 years</u>. What will be your monthly <u>payment</u>? $n = 30 * 12$ rate = 3.7% / 12 $PV = 450,000$</p>	<p>3. PMT <u>\$ 2,071</u></p>
<p>4. You are currently <u>twenty-five years old</u> and have set a savings goal of <u>\$1,200,000</u> for when you reach <u>70 years old</u>. You presently have <u>savings of \$50,000</u> and no debt. How much must be saved each year to attain your <u>savings goal of \$1,200,000</u>? Assume you can earn an annual return of <u>6%</u> on your savings. $n = 70 - 25$ rate = 6% $FV = 1,200,000$ $n = 45$ $PV = 50,000$</p>	<p>4. PMT <u>\$ 8,876</u></p>
<p>5. Three hundred bonds with a <u>face value of \$30,000</u> pay <u>\$1,000 per year</u> and mature in <u>16 years</u>. How much should an investor pay for this investment if they desire a <u>7%</u> annual return? $FV = 30,000$ $n = 16$ rate = 7% $PMT = 1,000$</p>	<p>5. PV <u>\$ 19,609</u></p>
<p>6. Four hundred fifty strip bonds with a <u>face value of \$45,000</u> mature in <u>10 years</u>. How much should an investor pay for this investment if they desire a <u>6.0%</u> annual return? $n = 10$ rate = 6% $FV = 45,000$</p>	<p>6. PV <u>\$ 25,128</u></p>
<p>7. You and your spouse earn <u>\$120,000 per year</u>, and want to spend only <u>35%</u> of your income on a mortgage payment. You qualify for a <u>15-year loan</u> at an annual rate of <u>3.7%</u>. Find how much you can borrow with these limitations. $n = 15 * 12$ rate = 3.7% / 12 $PMT = 120,000 * (.35) = 42,000$ $LOAN = * 12 / 12$</p>	<p>7. PV <u>\$ 482,929</u></p>
<p>8. You are currently <u>twenty-five years old</u> and have set a savings goal of <u>\$1,000,000</u> for when you reach <u>65 years old</u>. You presently have <u>no savings</u> or debt. How much must be saved each year to attain your <u>savings goal of \$1,000,000</u>? Assume you can earn an annual return of <u>7%</u> on your savings. $n = 65 - 25$ $n = 40$ rate = 7% $PV = 0$ $FV = 1,000,000$</p>	<p>8. PMT <u>\$ 5,009</u></p>

<p>9. You are <u>twenty-five years old</u> and currently have no savings. You have only one debt, a <u>\$60,000 student loan</u>. You plan to retire at age <u>80 years</u>. If you start to save <u>\$4,000 per year</u> starting at age 25, how much will have been saved at retirement? Assume you will earn a <u>6%</u> return on your savings. $n = 80 - 25$ rate = 6% PMT = 4,000 $n = 55$ $PV = -60,000$</p>	<p>9. FV</p> <p style="text-align: center; font-size: 1.5em;">\$ 97,669</p>										
<p>10. - 11. An investment is projected to earn the following net operating incomes.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Year</th> <th>Net Operating Income</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$90,000</td> </tr> <tr> <td>2</td> <td>\$97,000</td> </tr> <tr> <td>3</td> <td>\$103,000</td> </tr> <tr> <td>4</td> <td>\$109,000</td> </tr> </tbody> </table> <p>At the end of the four-year holding period, the investment is sold for net proceeds of \$900,000.</p> <p>10. Find the net present value of this investment if you want to earn a 9% rate of return. rate 9% Year 4 = 109,000 + 900,000</p> <p>11. What is the rate of return if you pay \$875,000 for this investment? (Report to nearest tenth %) Year 0 = -\$875,000</p>	Year	Net Operating Income	1	\$90,000	2	\$97,000	3	\$103,000	4	\$109,000	<p>10. NPV</p> <p style="text-align: center; font-size: 1.5em;">\$ 958,548</p> <hr/> <p>11. IRR</p> <p style="text-align: center; font-size: 1.5em;">11.9%</p>
Year	Net Operating Income										
1	\$90,000										
2	\$97,000										
3	\$103,000										
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<p>12. Provide an income statement estimating Year 4 Net Operating Income for this property.</p> <ul style="list-style-type: none"> • 15-unit apartment building with all two-bedroom units. • Each unit will rent for \$1,200 per month in year one. • Rents will increase 4% each year. • Estimate vacancy and collection loss at 6% of gross income. • Annual expenses in year one will be \$50,000, and are projected to increase at 7% annually. <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><u>Annual Gross Income</u> A.G.I</p> <p><u>Vacancy and Collection</u> V&C</p> <p><u>Annual Effective Gross Income</u> A.E.G.I</p> <p><u>Annual Expenses</u> A.E</p> <p><u>Annual Net Income</u> A.N.I</p> </div> <div style="width: 50%;"> <p style="text-align: right;">1,200 (15 X 12) = \$18,000 (1.04) ↑ annually by 1.04</p> <p style="text-align: right;">\$ 242,971</p> <p style="text-align: right;">AGI (1.06) AGI - V&C</p> <p style="text-align: right;">\$ 14,578</p> <p style="text-align: right;">\$ 228,392</p> <p style="text-align: right;">50,000 (1.07) ↑ annually by 1.07</p> <p style="text-align: right;">\$ 61,252</p> <p style="text-align: right;">AEGI - A.E</p> <p style="text-align: right;">\$ 167,140</p> </div> </div>											