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**EMBA FIN 511
Investments**



EMBA Investments



Time Value of Money Review

• **Future Value:**

- o You have \$500 today. If you invest the \$500 for 3 years at 12% interest, how much will you have in 3 years?
- o $FV = PV \times (1 + r)^t = 500(1.12)^3$
- o = \$702.46

• **Present Value:**

- o You will need to have \$1,000 in 3 years. How much will you need to invest today at 12% interest to ensure you have \$1,000 in 3 years?
- o $PV = FV / (1 + r)^t = 1,000 / (1.12)^3$
- o = \$711.78

Time Value of Money Review (cont)

• **Future Value of an Annuity:**

You plan on investing \$1,000 per year for 10 years. If you invest the money at 12% interest, how much will you have in 10 years?

$$FVA = PMT \times \left[\frac{(1+r)^t - 1}{r} \right]$$

$$FVA = 1,000 \times \left[\frac{(1+.12)^{10} - 1}{.12} \right] = \$17,548.74$$

Time Value of Money Review (cont)

• **Present Value of an Annuity:**

- o You borrow \$10,000 today and will repay it (with interest) over 10 years? How much will your payment be at 12% interest?

$$PVA = PMT \times \left[\frac{1 - \left[\frac{1}{(1+r)^t} \right]}{r} \right] \quad 10,000 = PMT \times \left[\frac{1 - \left[\frac{1}{(1+.12)^{10}} \right]}{.12} \right]$$

PMT = \$1,769.84

NPV & IRR Review

- o Your firm is considering investing in a project with the following cash flows and your discount rate is 12%:

Year	Cash Flow
0	-500
1	200
2	150
3	300

NPV & IRR Review

- Find the NPV of this project, assuming your discount rate is 12%.

<u>Year</u>	<u>Cash Flow</u>
0	-500
1	200
2	150
3	300

- To find NPV, calculate the PV of the cash flows
- $NPV = -500 + 200 / (1.12)^1 + 150 / (1.12)^2 + 300 / (1.12)^3$
- $NPV = \$11.68$

NPV & IRR Review

- Find the IRR of this project.

<u>Year</u>	<u>Cash Flow</u>
0	-500
1	200
2	150
3	300

- To find IRR, calculate the rate that equates the initial investment to discounted value of the cash flows
- $-500 = 200 / (1+IRR)^1 + 150 / (1+IRR)^2 + 300 / (1+IRR)^3$
- $IRR = 13.26\%$