

2024 Fall Math 140 Week-In-Review

Week 12: Sections 6.1 and 6.2

Some Key Words and Terms: Interest, Simple Interest, Principal/Present Value, Accumulated Amount/Future Value, Interest Rate, Time, Compound Interest, Compounding Periods, TVM Solver, Savings/Investing, Total Interest Earned, Continuously Compounded, Effective Interest Rate/Effective Yield, Annuity, Loan, Down Payment, Total Paid on the Loan, Total Interest Paid, Total Amount Paid.

Interest:

Simple Interest:

Principal/Present Value:

Accumulated Amount/Future Value:

Interest Rate:

Time:

Compound Interest:

Compounding Periods:

TVM Solver:

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

Savings/Investing:

Total Interest Earned:

Continuously Compounded:

Effective Interest Rate/Effective Yield:

Annuity:

Loan:

Down Payment:

Total Paid on the Loan:

Total Interest Paid:

Total Amount Paid:

Examples:

1. Your car breaks down and you have to take out a short term loan. The loan offers a simple interest rate of 23% for 8 months. If you need to borrow \$1,800, how much will you owe at the end of the loan?

2. You borrow \$20 from your friend while you're out and tell them you'll pay them back \$30 in two weeks. If this is treated as a loan with simple interest, what is the simple interest rate you offered to pay?

3. You decide to deposit \$2,500 in a savings account that earns 4.2% annual interest compounded weekly. If you make no other deposits, how much money will be in the account after 15 years?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

4. How long will it take a one-time investment of \$10,000 to grow to \$45,000 at an annual interest rate of 6% compounded continuously? (Round your final answer to 2 decimal places)

5. What would be the minimum interest rate needed to triple any initial deposit in 10 years if the account has an annual interest rate that is compounded continuously? (Round your final answer to 3 decimal places before converting to a percent)

6. From the following accounts, which would be the best for a savings account?

- Account A: 5.6% annual interest, compounded monthly
- Account B: 5.5% annual interest, compounded weekly
- Account A: 5.7% annual interest, compounded continuously

7. From the following accounts, which would be the best for a loan?

- Account A: 6.2% annual interest, compounded daily
- Account B: 6.23% annual interest, compounded weekly
- Account A: 6.18% annual interest, compounded quarterly

8. You decide to start putting money aside for emergencies. You open a savings account with an initial deposit of \$1,000 and make monthly deposits of \$125. The account earns an annual interest of 2.55% compounded monthly. How much money will you have saved after 10 years?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

9. After completing your freshman year, you decide to start saving money for a summer trip at the end of your senior year, 3 years away, that will cost \$12,000. How much money would you need to deposit in the account each week if you don't have any money to make an initial deposit and the account earns 3.2% annual interest compounded weekly?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

10. Your car breaks down and you have to put the repairs on a credit card. The repairs cost \$2,390 and the credit card charges an annual interest rate of 28% compounded monthly. Your credit card company requires you to make a minimum monthly payment of \$61. How many years will it take to pay off the repairs if you only make the minimum payment every month? (Round your answer to 2 decimal places)

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

11. You want to take out a personal loan to make some home repairs. You can handle a monthly payment of up to \$230 per month and plan to take out a 4-year loan at an annual interest rate of 6.2% compounded monthly. What is the maximum loan amount you can apply for?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

12. You decide to buy a house you plan to rent to generate passive income. The house you plan to buy has a listing price of \$315,000. You find a bank that will finance a 20-year loan at 3.4% annual interest compounded monthly. You plan to make a down payment of 15% of the listing price.

(a) How much will the down payment be? How much will you have to take out as a loan?

(b) What will be the outstanding balance on the loan after 10-years? How much equity do you have at that point?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)

(c) How much will you pay in interest over the life of the loan?

13. You take out a loan 3-year for \$23,500 at an annual interest rate of 7.6% compounded monthly. How much of the 4th payment is applied to the principal and how much is applied to interest?

N

I%

PV

PMT

FV

C/Y

P/Y

End (always)