#1 How much of a loan can I get?

First, press the Orange Bar key, then move your finger down and press the C ALL key.

How much of a car loan can you get today if you make a $300 monthly payment for 36-months at 5.74% APR?

Now to solve, simply press the “PV” key.

- 300 PMT

5.74 I/YR

36 N

PV 9,899.59

#2) Savings PMT: Saving to become a millionaire

First, press the Orange Bar key, then move your finger down and press the C ALL key.

How much of a payment do you have to save per month if you want to have $1,000,000 in the future if you start saving at age 18 and save until you are 60, while investing in a stock index fund that averages a 10% annual return?

1,000,000 FV

60-18= 42
42x12=504 N

10 I/YR

PMT -129.13

#3) Compute I/YR: What Annual Interest Rate is being charged by a Rent-to-Own store?

First, press the Orange Bar key, then move your finger down and press the C ALL key.

Suppose you walk into Yuddy's Rent-to-Own store in Round Rock and see an HP refurbished laptop you want. Today's cash price is $1,299.99. If you don't have the cash today, they do advertise a financing plan. The Number of payments you will make is 18, in the amount of $107.99 per Payment.

Question: What annual interest rate are you paying on the monthly payment plan?

1299.99	PV
18	N
-107.99	PMT
	I/YR 55.52%

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?

The next slide shows a truly outrageous interest rate based on a Payday Loan company flyer I picked up there.

#4) PV of a Series of Payments: What is the Retirement Nest Egg Amount?

First, press the Orange Bar key, then move your finger down and press the C ALL key.

What amount will you need in the bank when you retire in order to make withdrawals of $2,000 monthly for 20 years if interest rates are 4% APR?

-2000 PMT

20X12=240 N

4 I/YR

PV 330,043.72

Before you press the Orange Bar key, then C ALL for the next problem, suppose you had invested differently, and earned a 10% annual return instead?

What amount will you need in the bank when you retire? 207,249.24

#5) PV of a Series of Equal Payments: How much is your Lump Sum Offer Today?

First, press the Orange Bar key, then move your finger down and press the C ALL key.

Your doorbell rings, and your Ring App shows the famous Steve Harvey standing there. Oh my word, The Publishers Clearinghouse Sweepstakes has just knocked on your door, and you've won the $10,800,000 Sweepstakes! They give you the choice of $30,000 per month (hint: payments) for 30 years, or a lump sum cash payout today.

If annual interest rates are 4.3871134%, how much will they offer you today (PV) as a lump sum payout? (This is the amount they need in the bank today to fund the payments to you.)

-30,000 PMT

30X12=360 N

4.3871134 I/YR

PV 6,000,000.10

#6) Savings PMT: Start Saving at Different Ages

First, press the Orange Bar key, then move your finger down and press the C ALL key.

How much would your monthly savings payments be to reach $1,000,000 in the future at age 65, with a mutual fund earning an average of 10% annual return, if you begin saving at the following ages?

		a) Age 21		b) Age 51		
a)	65-21=44 44x12=528	N	1,000,000	FV	10	I/YR	PMT	-105.51
b)	65-51=14 14x12=168	N					PMT	-2,748.69

#7) Extreme TVM: Retirement Monthly Savings

First, press the Orange Bar key, then move your finger down and press the C ALL key.

Mythological figures like Thor, Yoda, Princess Celestia, and Gandalf had lifespans of 950 years or more. Let's use 950 years in this example. Suppose that these figures each want to have $10,000,000 in the bank when they retire in the future. They are going to start saving monthly for retirement at age 100, and retire at age 700. Interest rates are 2.42% APR. How much of a payment do they each have to save per month?

10,000,000 FV

700-100= 600
600x12= 7200 N

2.42 I/YR

PMT -.01

#8) Extreme TVM: Lump Sum Deposit

First, press the Orange Bar key, then move your finger down and press the C ALL key.

What if instead of saving monthly, the mythological figures each wanted to make a single lump sum deposit in the bank (think Present Value) at age 100 and just let it grow to $10,000,000 over 600 years, with interest remaining at 2.42% APR. How much would that deposit need to be in year 100?

10,000,000 **FV**

700-100= 600
600x12= 7200 **N**

2.42 **I/YR**

PV -5.02

#9) Monthly PMT: Compute a Car Payment, and after doing so we will add a "what if" scenario.

First, press the Orange Bar key, then move your finger down and press the C ALL key.

What would the payments be on a $15,000 car loan for 48 months at 7.42% APR? -

15,000 PV

7.42 I/YR

48 N

PMT - 362.12

But **"what if"** if you could only afford $300 per month? What is the number of months the loan would be for?

-300 PMT

[ ]

[ ]

N 60

#10) Compute I/YR: Calculate the Return Rate used in a Dave Ramsey Video

First, press the Orange Bar key, then move your finger down and press the C ALL key.

The Dave Ramsey High School Curriculum has a video that begins with saying “Anyone can become a millionaire”… “If you invest just $100 bucks a month, starting at age 16, you will be a millionaire ($1,000,000 in the Future) by the time you are 55.” What annual return rate (I/YR) was he using?

100 PMT

55-16=39
39x12=468 N

1,000,000 FV

I/YR 11.86%

#11) Compute I/YR: Round Rock "Stock Market Game"

First, press the Orange Bar key, then move your finger down and press the C ALL key.

On September 20, 2023 a student in RRISD invested $100,000 in an online simulation called The Stock Market Game. As of March 20, 2024 the value of the portfolio was $211,266.34. What was the 6 month return (I/YR) on this investment? **(In this problem, since $100,000 of the student's money was taken out of their account and put into the stock market, the $100,000 will be entered as a negative number.)**

-100,000 PV

6 N

211,266.34 FV

I/YR 159.31%

#12) PV: Accept the Lump Sum or Take a Monthly Payout

First, press the Orange Bar key, then move your finger down and press the C ALL key.

Suppose a relative who has worked a long time for a large company is retiring. As part of their retirement benefits, the employer offers them the choice between the following retirement options:

A. $600,000 lump sum paid today. (So $600,000 is the PV for this Option A.)
B. Payments of $3,000 per month guaranteed for 25 years. Interest rates are 4% annually. (Calculate the PV of this option.)

For simplicity, assume everything else is the same. Based strictly on the PV you calculated, which option has the higher PV ($600,000 or $568,357.45), and is therefore the better option to take?

-3,000 PMT

25x12= 300 N

4 I/YR

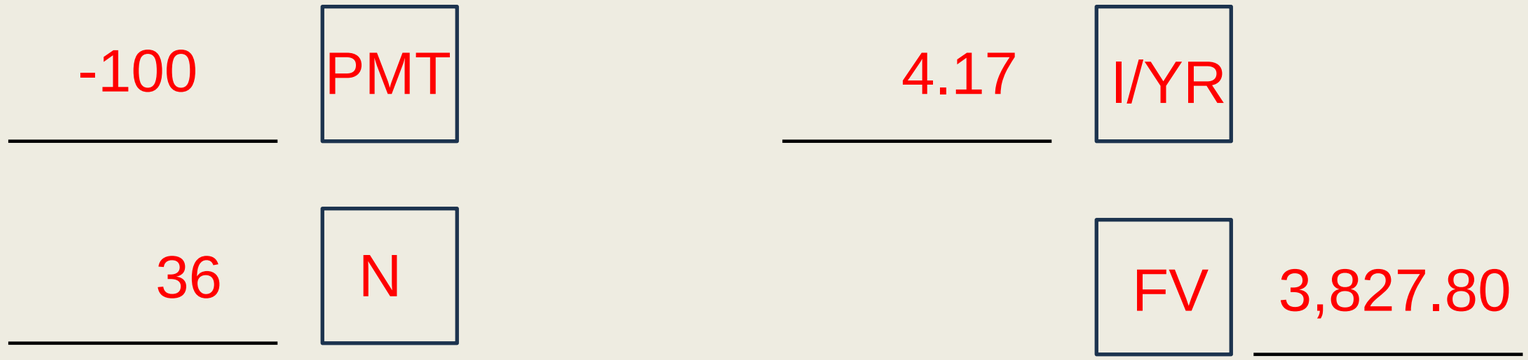
PV 568,357.45

Bonus: FV of Savings: Monthly Savings Deposits for Car Down Payment

First, press the Orange Bar key, then move your finger down and press the C ALL key.

Let's say you put $100 monthly in a savings account for 36 months that earns 4.17% annual percentage rate (a local institution offers this) to save for a down payment on a car.

Question: How much will your savings grow to in the future, as in the Future Value?



You may download this Presentation deck and the Problems and Answers for non-commercial use in high school classrooms from SavingandBorrowing.org (no email or account set up is even needed) under the following terms and conditions: