

Money And Time

Debt And Investing

How a loan calculation is made:

$$P = \frac{\left(A \cdot \frac{r}{n}\right)}{1 - \left(1 + \frac{r}{n}\right)^{-nt}}$$

P = payment

A = amount of loan

r = annual interest rate

n = number of periods per year

t = time



Median House Listing for Barriere, BC is roughly \$300,000.

Mortgage rate is roughly 6%.

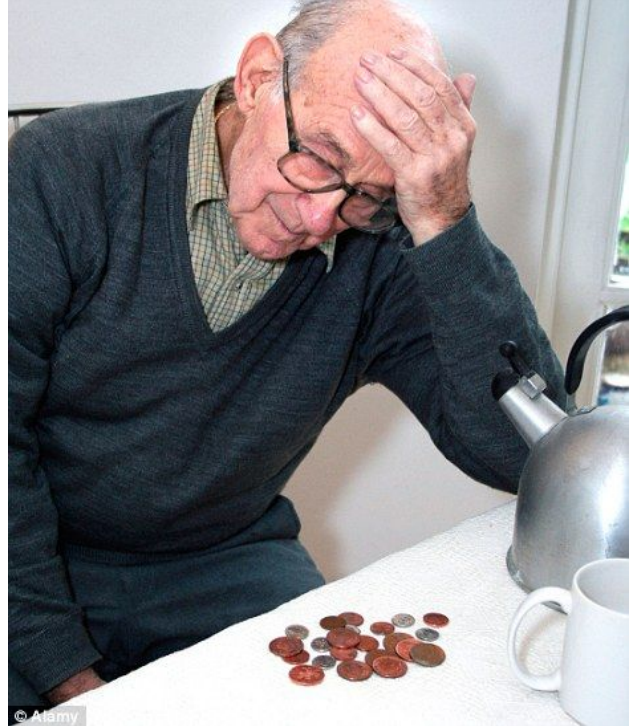
$$P = \frac{300,000 \left(\frac{.06}{12}\right)}{1 - \left(1 + \frac{.06}{12}\right)^{-12(25)}} = \$1,932.90$$

$$\frac{.06}{12} = 0.005$$

$$12(25) = 300$$

$$300,000(0.005) = 1500$$

$$1 - \left(1 + 0.005\right)^{-300} = .77603$$



So, you want to be a millionaire

$$P = \frac{F \cdot \frac{r}{n}}{\left(1 + \frac{r}{n}\right)^{nt} - 1}$$

Where F is the money you want to have (Future Value)

Facts:

- Twice as many Canadians are working past 65 in the last 15 years.
- Life expectancy is steadily increasing.
- More than half of Canadians have not started to plan for their retirement.

$$P = \frac{1,000,000 \left(\frac{.12}{12}\right)}{\left(1 + \frac{.12}{12}\right)^{12(45)} - 1}$$

$$= \$16.61$$

What if you waited until you're 40.
= \$532.24

Future Value / Present Value

You do a job for someone and they can pay you \$100 today or \$100 next year, which is better?

If the answer is so obvious why do so many people ask their employer to take extra money off of their cheque so that they can get a refund?! Never do this. You are asking to be paid later than today. This is always the wrong answer (assuming equal amount).

So, how much would you have to pay me one year later for it to be a good deal?

$$FV = PV \times \left(1 + \frac{r}{n}\right)^{nt}$$

Assume \$100 at 12% with 12 periods for 1 year...

Hint: \$112.68

So, when you defer your income (or have your employer take extra money off of your cheque) the government / employer gets the extra \$12.68 from every person who does this. It is literally millions of dollars.

I call it the **Dumb Tax**.



You win the lottery. \$10,000,000

You have have $\frac{10000000}{30}$ annually for 30 years, or half the money today. What do you choose?

(this is actually how Canadian lottery works *roughly - it's a bit more than half up front)

$$F.V = 5,000,000 \left(1 + \frac{.12}{12}\right)^{12(30)}$$