Instead of a unit test we will be a couple of larger assignments. This is the first. The following problems will follow the life of Brian; from grade school until retirement. You will help Brian along the way by using your knowledge of financial math to make important life decisions and calculations.

/45

Include concluding statements and units for each question!

1) [5 marks] When Brian was very young, his parents started saving $50 per month for when he was done high school. The money was invested in a GIC that paid 2.4% interest compounded monthly. You are going to find out how much Brian would have when he finishes school in 18 years.



(deposits)

0

a) How many months are in 18 years?

b) How much did Brian have in 18 years (FV)?

2) [5 marks] When Brian was 10, he wanted to buy a Super Nintendo worth 200$. His parents wanted to teach him a lesson about borrowing money. His parents loaned him the $200 at 1% interest compounded monthly, and made him pay it back in monthly payments for 2 years.

a) How many months are in 2 years?



(payments)

0

b) What was Brian’s monthly payment?

3) [10 marks] Brian finished high school and started a millwright apprenticeship. He needed to buy his first vehicle. He has the following two options:

* Lease a brand new 2017 Ford F-150 for $1,500 down payment, and 48 payments of $349.
* Finance a used 2012 Ford F-150 worth $15,000 for $1,500 down at 2.9% interest for 4 years.

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1. Calculate the total cost of leasing the car.

b) Describe what a down payment is.

c) How much would Brian need to borrow to buy the used truck. This will be your PV.

d) Calculate his monthly payment (Pmt).



(payments)

0

e) Calculate the total of 48 monthly payments.

f) Describe two advantages of Brian buying his truck, over leasing the new truck.

4) [5 marks] Brian has now been working for a few years, and decides it is time to buy a home. He is thinking of a starter home worth $349,000. There are some extra costs associated with buying this home though. They are listed below.

*Land-transfer tax*: 0.75% *Mortgage loan insurance premium*: 2.75%

*Building inspection*: 0.25% *Legal fees*: 1%

Determine the total of these costs for a house with selling price $349,000.

|  |  |  |  |
| --- | --- | --- | --- |
| Expense | Percentage | Convert to a decimal (Divide by 100) | Calculate the cost (multiply by $349,000) |
| Land-transfer tax | 0.75% |  |  |
| Building Inspection | 0.25% |  |  |
| Loan Insurance | 2.75% |  |  |
| Legal Fees | 1% |  |  |
| Totals | | |  |

5) [5 marks] Brian had a down payment of $25,000 saved up for this home.

a) How much will he have to borrow (this will be PV below)?

b) Brian gets a 2.9% interest rate compounded bi-weekly, and he will pay the loan back over 25 years.

c) How many bi-weekly periods are in 25 years?



(payments)

0

26

26

d) Find Brian’s bi-weekly payment.

e) How much did Brian pay over the course of his mortgage?

f) How much interest did Brian have to pay over the course of his mortgage?

6) [5 marks] Brian is now ready to plan for his retirement. He invests **$400 every month** into an RRSP (retirement savings plan). This plan pays 5.2% interest **compounded monthly.** How much money will Brian have when he retires in 35 years?



(deposits)

0

a) How many months are in 35 years?

b) Find FV:

\*Take your value for FV, and substitute it in for PV in question 7

7) [5 marks] Brian is now retired, and plans to live off of his savings from question 6. He wants the money to last 25 years.



(deposits)

0

a) How many months are in 25 years?

b) Calculate what he can withdraw each month (Pmt):

8) [5 marks] Complete the following table to see compare how much of his own money Brian put in, compared to how much he withdrew.

|  |  |  |
| --- | --- | --- |
| Total # of Deposits | Deposit Amount | Total Deposited over 35 years |
|  |  |  |
| Total # of Withdrawals | Withdrawal Amount | Total Withdrawn over 25 years |
|  |  |  |

9) How much did Brian earn in interest over these 60 years?