

## Answer on Question #74154 – Math – Financial Math

### Question

Luis Mahla purchases a Porsche Boxster for \$46,800 and finances the entire amount at an annual interest rate of 5.4% for 8 years. Find the monthly payment. Assume the sales tax is 6% of the purchase price and the license fee is 1% of the purchase price (Round your answer to the nearest cent).

### Solution

$$\text{Price} = \$46,800$$

$$R_{\text{Annual}} = 0.054 = 5.4\%$$

$$T = 8 \text{ years}$$

$$n = 12 \text{ (monthly payment)}$$

$$i_{\text{tax}} = 0.06 = 6\%$$

$$i_{\text{fee}} = 0.01 = 1\%$$

Sales tax equals

$$\text{Sales Tax} = \text{Price} \cdot i_{\text{tax}} = \$46,800 \cdot 0.06 = \$2,808.$$

License fee equals

$$\text{License fee} = \text{Price} \cdot i_{\text{fee}} = \$46,800 \cdot 0.01 = \$468.$$

Thus, the amount Luis Mahla needs to borrow is

$$PV = \text{Price} + \text{Sales Tax} + \text{License fee} =$$

$$= \$46,800 + \$2,808 + \$468 = \$50,076.$$

Monthly interest rate is

$$r = \frac{R}{n} = \frac{0.054}{12} = 0.0045 = 0.45\%.$$

Number of payments is

$$N = T \cdot n = 8 \cdot 12 = 96.$$

Thus, the monthly payment for a loan on \$50,076 for 8 years at 5.4% of annual interest rate will be

$$PMT = \frac{r \cdot PV}{1 - (1 + r)^{-N}} =$$
$$= \frac{0.0045 \cdot \$50,076}{1 - (1 + 0.0045)^{-96}} = \frac{\$225.342}{1 - 0.6498} = \frac{\$225.342}{0.3502} = \$643.54.$$

Luis Mahla will pay \$643.54 per month for the car he wants to buy (including sales tax and license fee).

**Answer:** monthly payment is \$643.54.