

Loans and Loan Payments In-Class Exercise (KEY)

Use the spreadsheet to show how easy it is to calculate payments. Have the students use the spreadsheet to get them used to it.

1. Jack borrowed \$15,000 to purchase a used tractor. The loan is for 4 years at 6% APR.
 - a. Estimate how much interest Jack will owe in the first year.

$$\text{Interest Due} = \text{Loan Principal} \times \text{Interest Rate}$$

$$\text{\$15,000} \times \text{6\% APR} = \text{\$900 interest due in the first year}$$

- b. Calculate the annual loan payment for this tractor loan.

$$\text{Factor for 6\% APR for 4 years (Table 3)} = \text{0.2886}$$

$$\text{Annual Loan Payment} = \text{\$15,000} \times \text{0.2886} = \text{\$4,329/year}$$

- c. Calculate how much loan principal Jack will be repaying in the 1st loan payment.

$$\text{Loan Principal Due w/i 1 Year} = \text{Annual Loan Payment} - \text{Interest Due This Year}$$

$$\text{Loan Principal Due w/i 1 Year} = \text{\$4,329} - \text{\$900} = \text{\$3,429}$$

2. Emily borrowed \$150,000 to buy a house. The mortgage is for 30 years at 7% APR. Calculate the monthly payment on Emily's mortgage.

$$\text{Step 1: Factor for 7\% APR for 30 years (Table 4)} = \text{6.65}$$

$$\text{Step 2: } \text{6.65} \times \text{\$150,000} / \text{\$1,000} = \text{\$997.50/month}$$

3. Dustin wants to start his veterinary practice. He will need to borrow \$300,000 to get the necessary equipment and facilities. He will make a down payment of \$50,000 and borrow the remaining amount at 6% for 20 years.

- a. Calculate the amount of the loan Dustin will be borrowing.

$$\begin{aligned} \text{Loan Amount} &= \text{Purchase Price} - \text{Down Payment} \\ &= \text{\$300,000} - \text{\$50,000} = \text{\$250,000 loan} \end{aligned}$$

- b. Calculate the monthly loan payment on Dustin's loan.

$$\text{Factor for 6\% for 20 years} = \text{7.16} \quad \text{Loan Amount}/\text{\$1,000} = \text{250}$$

$$\text{Loan Payment} = \text{7.16} \times \text{250} = \text{\$1,790}$$

NOTE: the loan payments using the tables may be different from the spreadsheet due to rounding errors.