Worksheet Finance 4: Loans

Useful Formulas

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

Suppose AJ wants to buy a car that costs \$16,000. AJ saved \$3,000 but plans to finance the rest using either a 3-year loan at 3% APR or a 5-year loan at 4.5% APR. Assume there is monthly compounding.

We want to help AJ determine the monthly payments in each case and objectively compare the two options.

1. Circle the formula you will need to determine the monthly payments.
2. Use a spreadsheet to determine AJ's monthly payments for both the 3-year and the 5-year loan. (Suggested set up is on the back.)
3. Determine how much AJ will actually pay for the car in each scenario.
4. Explain to AJ what are the benefits and drawbacks of each scenario.

	A	B	C	D	E	F
1		loan amount	APR (decimal)	compounding times per year	length of loan (years)	loan payment each period
2		P	r	n	t	d
3	3-year loan					
4						
5	5 year loan					
6						