

Math 1324
Section 4.3
Amortizations and Sinking Funds

The videos corresponding to this worksheet can be found at

<https://online.math.uh.edu/Math1324/>.

UH students can also view the videos within the Math 1324 textbook.

Amortizations

Amortization is the process of paying off a debt with equal periodic payments made over a specified period of time that includes a portion of the principal and interest.

Amortization Formula:
$$E = \frac{Pi}{1 - (1 + i)^{-n}}$$

E = equal periodic payment

P = present value

i and n have the same meaning as before

Sinking Fund

A **sinking fund** is a fund accumulated over time in order to pay off a debt or meet future goals or obligations.

Sinking Fund Formula:
$$E = \frac{Fi}{(1 + i)^n - 1}$$

F = future value

E = equal periodic payment

i and n have the same meaning as before

Example 1: Carrie just graduated from college and got her first real job. Her aunt loaned her \$15,000 over the past 4 years for her tuition and books. Carrie now needs to pay her aunt back. Her aunt will charge her 3% per year compounded monthly. How much will Carrie's monthly payments be if she wishes to owe her aunt nothing in 4 years?

Example 2: Ted plans to retire in 30 years and decides to start saving for his retirement now. He wishes to have \$500,000 when he retires. The account he's decided to invest in pays 8% per year compounded semiannually. How much must he invest semiannually to achieve his goal?

Example 3: A local pizza delivery restaurant anticipates that it will need a new delivery car in 3 years. The car they are interested in buying costs \$10,000. How much should the pizza place invest each quarter over the next 3 years in an account that pays 3% per year compounded quarterly, to buy this new car when they anticipate needing it?

Example 4: A bedroom set costs \$3,000. You pay 5% down and secure a loan for the remaining balance. How much are your monthly payments if 18% per year compounded monthly is charged over a period of 2 years?