



Algebra 2
Modeling With Function Composition Notes

Today I will...	I'll know I've got it when...	Essential Question...

The cost to produce one compact disc is \$1.50 plus a one-time fixed cost of \$2000. The revenue received from selling one compact disc is \$12.

- a. Write a formula that gives the cost C of producing x compact discs.

- b. Write a formula that gives the revenue R from selling x compact discs.

- c. Profit equals revenue minus cost. Write a formula that calculates the profit P from selling x compact discs.

- d. What numbers of compact discs need to be sold to yield a positive profit?

- e. How much profit will be made if 300 compact discs are sold?

2. You make a purchase at a local hardware store, but what you've bought is too big to take home in your car. For a small fee, you arrange to have the hardware store deliver your purchase for you. You pay for your purchase, plus the sales taxes, plus the fee. The taxes are 7.5% and the fee is \$20.

a. Write a function $t(x)$ for the total, after taxes, on the purchase amount x . Write another function $f(x)$ for the total, including the delivery fee, on the purchase amount x .

b. Calculate and interpret $(f \circ t)(x)$ and $(t \circ f)(x)$. Which results in a lower cost to you?

c. Suppose taxes, by law, are not to be charged on delivery fees. Which composite function must then be used?