**Name: Date:**

**Chapter 6 - Systems of Equations - Applications**

**Advanced Algebra**

**Break-Even Analysis**

1. The demand and supply functions for a certain type of calculator are given by:

 Demand equation

 Supply equation

Where *p* is the price in dollars and *x* represents the number of units. Find the point of equilibrium for this market.

**State Population**

1. From 1985 to 1993 the population of Arizona was increasing at a faster rate than the population of South Carolina. Models that approximate the population P are:

 P = 2785.8 + 88.8t

 P = 3079.3 + 42.9t

 According to these two models, during which year would you expect the population of

 Arizona to be the same as the population of South Carolina?

The total cost $C$ of producing $x$ units of a product typically has two components – the initial cost and the cost per unit. When enough units have been sold so that the total revenue $R$ equals the total cost, the sales are said to have reached the **break-even point**.

You will find that the break-even point corresponds to the point of intersection of the cost and revenue curves.

1. A small business invests $10,000 in equipment to produce a product. Each unit of the product costs $0.65 and is sold for $1.20. How many items must be sold before the business breaks even?

Let $x=number of units$

Total Cost =

C =

Total Revenue =

R =