1. Tasty Fire inc. makes cinnamon flavored candies. They have fixed costs of $12,000 and variable costs of $0.28 per box of candy.

   (a) Find a cost function \( C(q) \) giving the cost for Tasty Fire to produce \( q \) boxes of candy.
   
   **Solution:** \( C(q) = 12000 + 0.28q \).

   (b) If Tasty Fire sells a box of candy for $1.95 per box, determine the revenue function \( R(q) \).
   
   **Solution:** \( R(q) = 1.95q \).

   (c) Find the profit function for Tasty Fire.
   
   **Solution:** The profit function is \( P(q) = R(q) - C(q) = 1.95q - (12000 + 0.28q) = 1.67q - 12000 \).

   (d) What is the break-even point?
   
   **Solution:** The break-even point occurs when \( P(q) = 0 \), or, equivalently, when \( R(q) = C(q) \). We get \( 1.67q - 12000 = 0 \), or \( 1.67q = 12000 \). Solving for \( q \) gives \( q = \frac{12000}{1.67} \approx 7185.6 \), so Tasty Fire needs to sell about 7186 units to break even.

2. A $400,000 office building is depreciated linearly over 25 years. Find its value as a function of time.

   **Solution:** The value of the building after 25 years is $0, so the points \((0, 400000)\) and \((25, 0)\) lie on the depreciation line. The slope of this line is therefore \( \frac{400000 - 0}{0 - 25} = -16000 \). The starting value of $400000 is also the \( y \)-intercept, so we have a value \( V \) after \( t \) years of \( V(t) = 400000 - 16000t \).