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1. The number of men in the work force (in millions) for selected decades from 1890 to 1990 can be approximated by the linear model determined by the line connecting (1890, 18.1) and (1990, 68.5).

- (a) Find the linear model for these data.  
(b) When were 53.38 million men employed?

2. Burnem, Inc. manufactures blank CDs and sells these to a distributor in packs of 500 CDs. If Burnem's total cost and total revenue (in dollars) for  $x$  packs of 500 CDs are given by

$$C = 2x + 7920 \text{ and } R = 20x$$

how many packs of 500 CDs must be sold for Burnem to break even?

3. Suppose that the demand and price of a certain shampoo are related by

$$p = 16 - \frac{5}{4}q$$

where  $p$  is price and  $q$  is the quantity demanded.

- (a) Find the price for a demand of 0 units? 4 units? 8 units?  
(b) Find the demand for the shampoo at a price of \$4.  
(c) The supply equation is

$$p = \frac{3}{4}q$$

where  $q$  is the quantity supplied and  $p$  is price. Find the supply when the price is \$0? \$10?

- (d) **The equilibrium quantity is the quantity so that the number supplied is the number demanded.** Find the equilibrium quantity for the shampoo.  
(e) **The equilibrium price is the price so that the number supplied is the number demanded.** Find the equilibrium price.  
(f) **The equilibrium point is the ordered pair  $(p, q)$  of the price and quantity so that the number supplied is the number demanded.** Find the equilibrium point.
4. Retailers will buy 45 cordless phones from a wholesaler if the price is \$10 each and will buy 20 if the price is \$60 each. The wholesaler will supply 35 phones at \$30 each and 70 at \$50 each. Assuming the supply and demand functions are linear, find the market equilibrium points.