

11. The break-even point is the point where the revenue and the cost are equal.

Cost is given by the variable cost of producing  $x$  pennants at \$0.75 per pennant, plus the fixed operational overhead of \$300 per day.

$$C = \$0.75x + \$300$$

Revenue is the product of price of each pennant (\$1) and the number of pennants sold.

$$R = \$1x$$

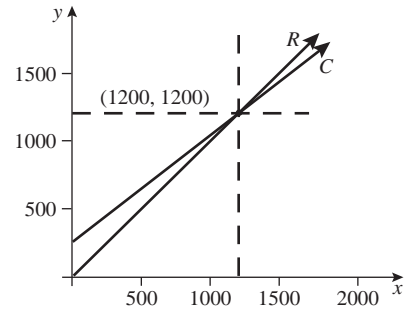
Setting  $R = C$ , we find

$$1x = 0.75x + 300$$

$$0.25x = 300$$

$$x = 1200$$

1200 pennants must be sold each day to break even.



13. (a) The market price is the price at which the supply and the demand are equal. (c)

$$S = D$$

$$0.7p + 0.4 = -0.5p + 1.6$$

$$1.2p = 1.2$$

$$p = 1$$

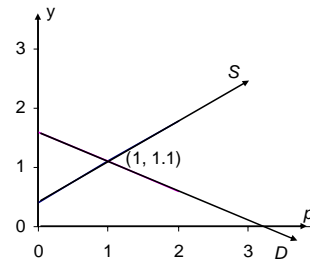
The market price is \$1.00 per pound.

- (b) To find the quantity supplied at market price, let  $p = 1$  and solve for  $S$ :

$$S = 0.7(1) + 0.4$$

$$= 1.1$$

So 1.1 million pounds are demanded at \$1.00.



- (d) The point of intersection called the market equilibrium. It is the price where the quantity supplied equals the quantity demanded.

17. (a) If  $R$  denotes the revenue and  $p$  denotes the price per paper, then

$$R = px$$

$$R = 1.79x$$

The revenue from delivering  $x$  newspapers is  $R = \$1.79x$ .

- (b) The cost of delivering  $x$  newspapers is  $C = 1.13x + 1,252,000$

- (c) Profit is the difference between revenue and cost.

$$P = R - C$$

$$P = 1.79x - (1.13x + 1,252,000)$$

$$P = 0.66x - 1,252,000$$

The profit from delivering  $x$  newspapers is given by  $P = \$0.66x - \$1,252,000$ .

- (d) The break-even point is the quantity for which the profit is zero.

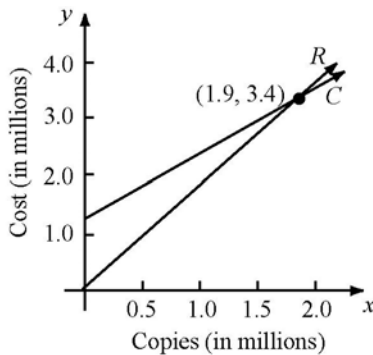
$$0 = 0.66x - 1,252,000$$

$$0.66x = 1,252,000$$

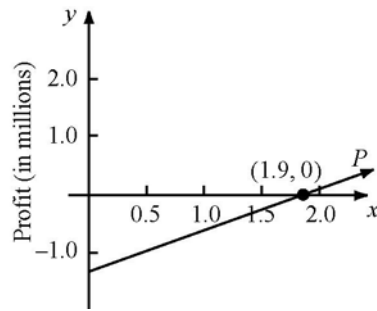
$$x = \frac{1,252,000}{0.66} = 1,896,969.697$$

The Tribune must deliver 1,896,970 Sunday papers to break even.

- (e)



- (f)



- (g) The break-even point is the same as the  $x$ -intercept of the profit equation.