

**Exercise Set 9.5**  
**CONSUMER SURPLUS**

III. Questions

1. Sketch the demand curve. Indicate intercepts and slope.

Equation for the demand curve:

$$P = 600 - 10Q$$

To find horizontal intercept, set  $P = 0$ .

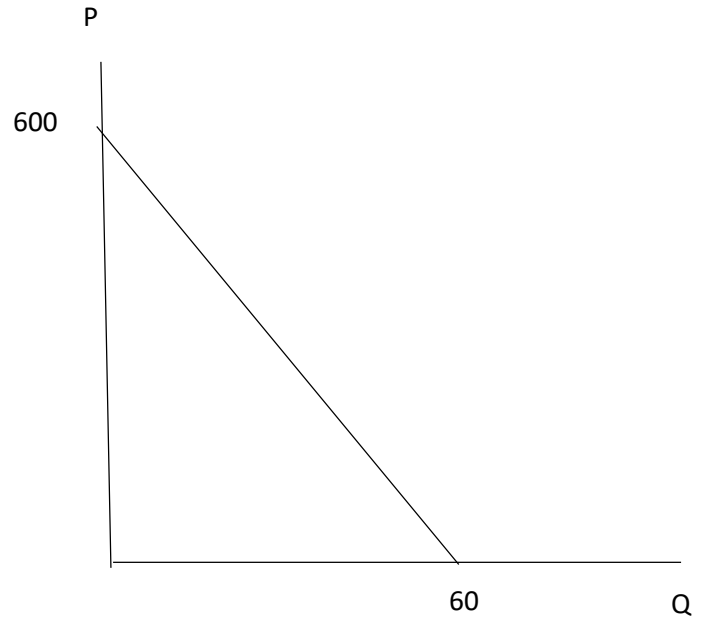
$$10Q = 600$$

$$Q = 60$$

Similarly, the vertical intercept is 600.

Slope =  $-1(\text{Vertical intercept})/\text{Horizontal intercept}$

$$= -10$$



2. What is the significance of the vertical intercept?

At a price of \$600,  $Q = 0$ , which means that at a price of \$600 or more, consumers will not buy any quantity of the good.

3. Select a value for market price. Suppose  $P = \$400$ .

From the demand equation:

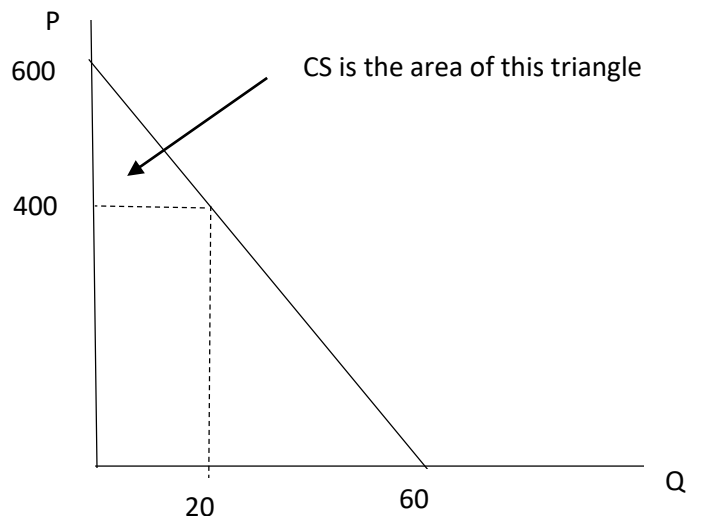
$$400 = 600 - 10Q$$

$$10Q = 200$$

$$Q = 20$$

Consumer surplus:

$$CS = (600-400)(20)/2 = \$2000$$

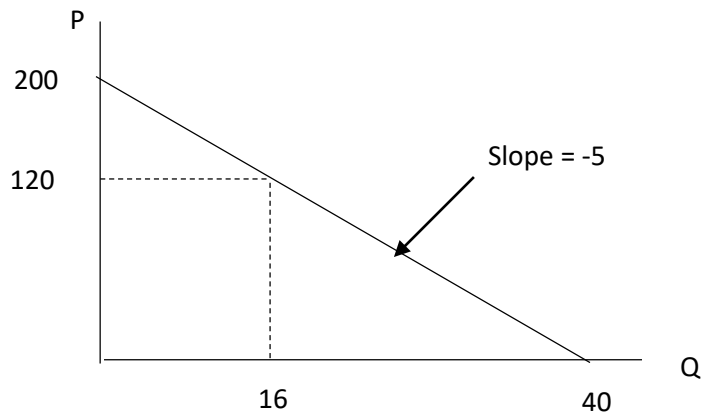


4. Increase  $P$  by 10%. The new value of  $P = 440$ . At this price:

- a. The quantity demanded of the good will **decrease** to 16.
- b. The consumer surplus will **decrease** to \$1280.

5. Suppose the demand curve for a good is given by  $Q = 40 - 0.2P$ .

a. Sketch the demand curve. Indicate the intercepts and slope.



b. At a market price of \$120, obtain the quantity demanded and the consumer surplus.

From the demand equation:

$$Q = 40 - 0.2(120) = 16$$

Consumer surplus:

$$CS = (200-120)(16)/2 = \$640$$

c. Show that consumer surplus will rise as price decreases.

As price increases, the area of the triangle decreases.