CONCEPT: QUANTITATIVE ANALYSIS OF CONSUMER AND PRODUCER SURPLUS

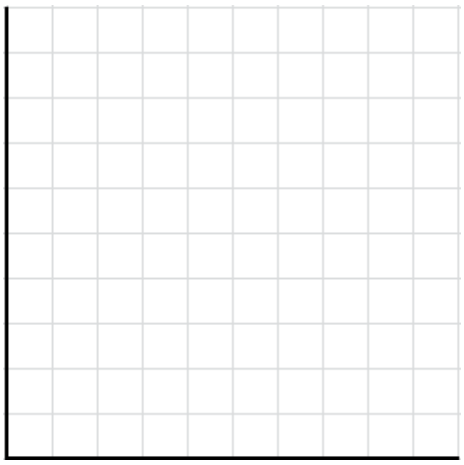
- We are sometimes asked to calculate consumer and producer surplus using algebra.
  - Steps for calculating consumer and producer surplus at equilibrium:
    - Step 1: Find Equilibrium Price and Quantity by setting $Q_D = Q_S$
    - Step 2: Find the "axis price" when $Q_D = 0$ and the "axis price" when $Q_S = 0$
    - Step 3: Calculate Consumer and Producer Surplus using the following equations.

$$Area\ of\ a\ triangle = \frac{1}{2} * base * height$$

$$Consumer\ Surplus = \frac{1}{2} * (Demand\ Axis\ Price - P^*) * Q^*$$

$$Producer\ Surplus = \frac{1}{2} * (P^* - Supply\ Axis\ Price) * Q^*$$

EXAMPLE: Calculate consumer and producer surplus using the given information.



$Q_D = 3{,}000{,}000 - 1{,}000P$ $Q_S = 1{,}300P - 450{,}000$

PRACTICE: The supply and demand curves for a product are as follows. What is consumer surplus in this market?

a) 6.25
b) 12.5
c) 20
d) 22.5
e) 25

$Q_D = 45 - 2P$

$Q_S = -15 + P$

PRACTICE: The supply and demand curves for a product are as follows. What is producer surplus in this market?

a) 6.25
b) 12.5
c) 15
d) 20
e) 25

$Q_D = 45 - 2P$

$Q_S = -15 + P$