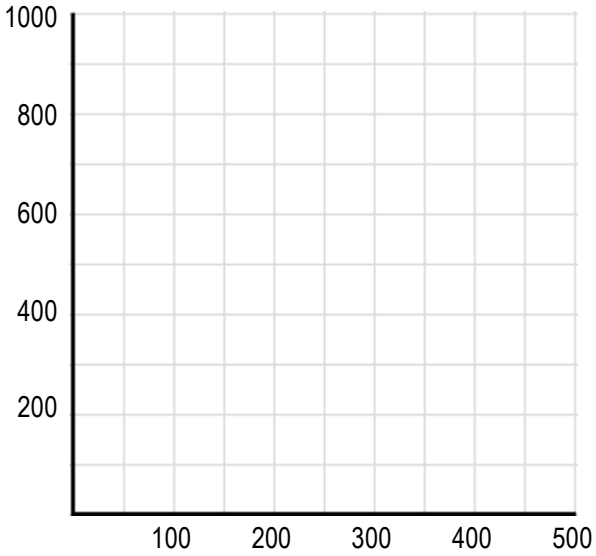
CONCEPT: SUPPLY AND DEMAND TOGETHER – QUANTITATIVE ANALYSIS

- We can use algebraic equations to find equilibrium price and quantity.

Plotting the equation of a demand curve on a graph:

$$P = 800 - 2Q_d$$



Quantity	Solve for Price

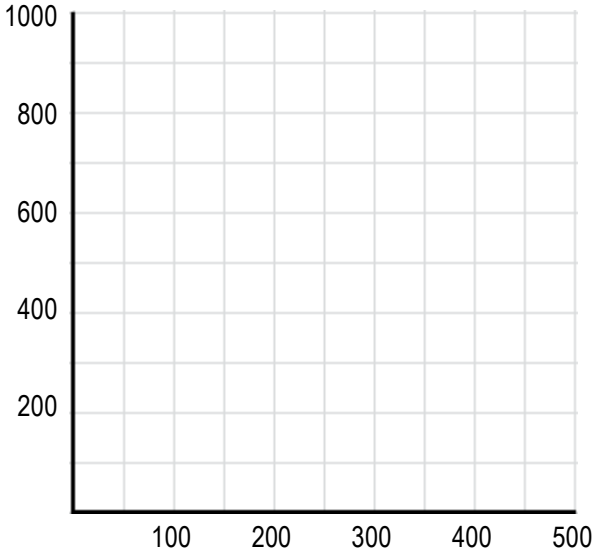
Isolating Variables:

We may need to rearrange the equation to put the other variable by itself:

$$P = 800 - 2Q_d$$

Plotting the equation of a supply curve on a graph:

$$P = 200 + Q_s$$



Quantity	Solve for Price

Isolating Variables:

We may need to rearrange the equation to put the other variable by itself:

$$P = 200 + Q_s$$

CONCEPT: SUPPLY AND DEMAND TOGETHER – QUANTITATIVE ANALYSIS

● We can find the equilibrium quantity and price from the equations of the demand and supply curves.

Step 1 (if needed): Rearrange the supply and demand equations so that both have the same isolated variable.

Step 2: Set the demand and supply curve equal to each other. At equilibrium, $Q_d = Q_s$, so use Q for both of them.

Step 3: Solve for the remaining variable using algebra.

Step 4: Use your answer from step two in either curve to solve for the other variable.

Demand	$P = 800 - 2Q_d$	$Q_d = 400 - \frac{1}{2}P$
Supply	$P = 200 + Q_s$	$Q_s = P - 200$

Step 2		
Step 3		
Step 4		

EXAMPLE: The supply and demand curves for ice cream are as follows:

$$P = 6 - \frac{1}{50} Q_d$$

$$Q_s = 150P - 100$$

What is the equilibrium price and quantity of ice cream?

a. P* = $1, Q* = 50
b. P* = $2, Q* = 200
c. P* = $3, Q* = 350
d. P* = $4, Q* = 500

PRACTICE: The supply and demand curves for a product are as follows:

$$Q_d = 10560 - 80P$$

$$P = \frac{1}{40} Q_s + 6$$

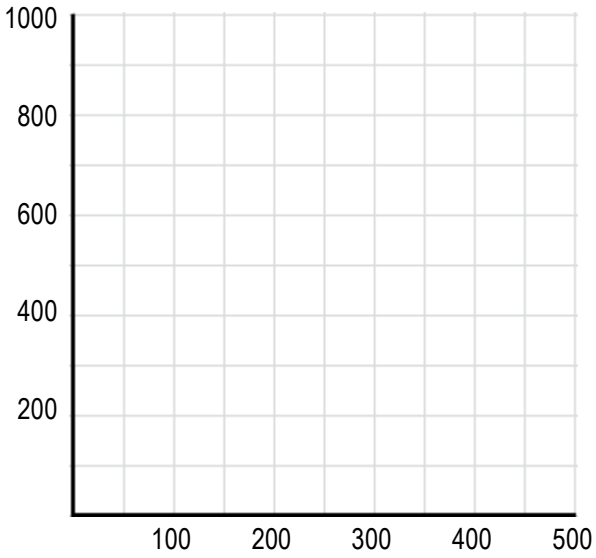
What is the equilibrium price and quantity of the product?

a. P* = $60, Q* = 5760
b. P* = $70, Q* = 4960
c. P* = $80, Q* = 4160
d. P* = $90, Q* = 3360

CONCEPT: SUPPLY AND DEMAND TOGETHER – QUANTITATIVE ANALYSIS

- The equilibrium reached algebraically can be found on the graph as the _____ of supply and demand.

Demand	$P = 800 - 2Q_d$	$Q_d = 400 - \frac{1}{2}P$
Supply	$P = 200 + Q_s$	$Q_s = P - 200$



Price	Quantity Demanded	Quantity Supplied