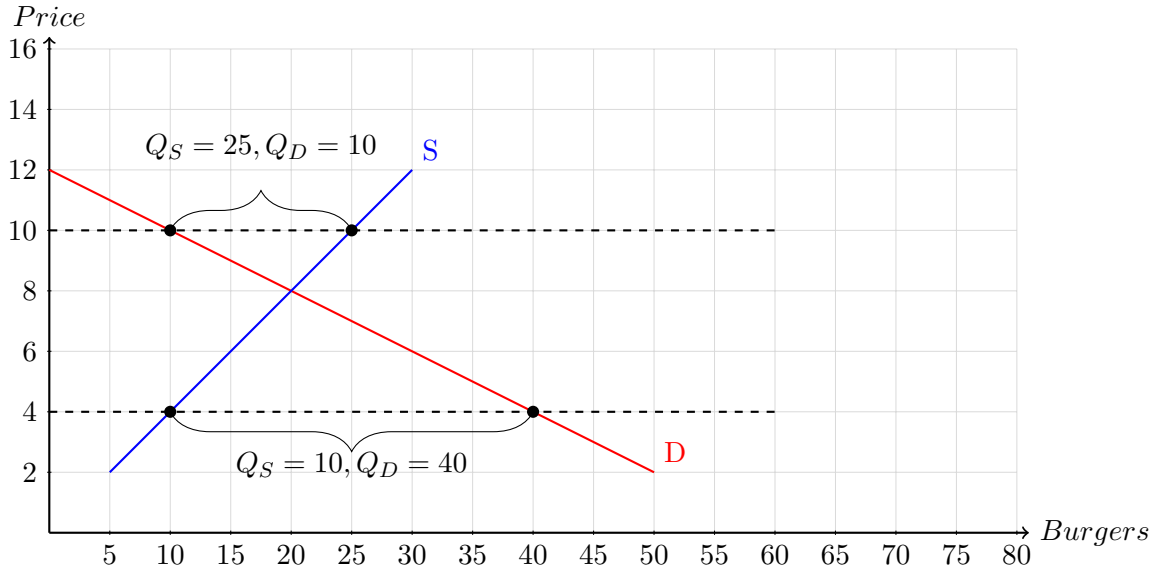
Supply and Demand

Problem 1. The table below provides information for the demand and supply of burgers.

Price ($)	Quantity of burgers Demanded	Quantity of burgers Supplied
12	0	30
10	10	25
8	20	20
6	30	15
4	40	10
2	50	5

a. On the graph below, draw the demand and supply curves.



b. If the price of a burger is currently \$10, is there a shortage or surplus of burgers?

There is a surplus of 15 units: $25 - 10 = 15$

c. If the price of a burger is currently \$4, is there a shortage or surplus of burgers?

There is a shortage of 30 units: $10 - 40 = -30$

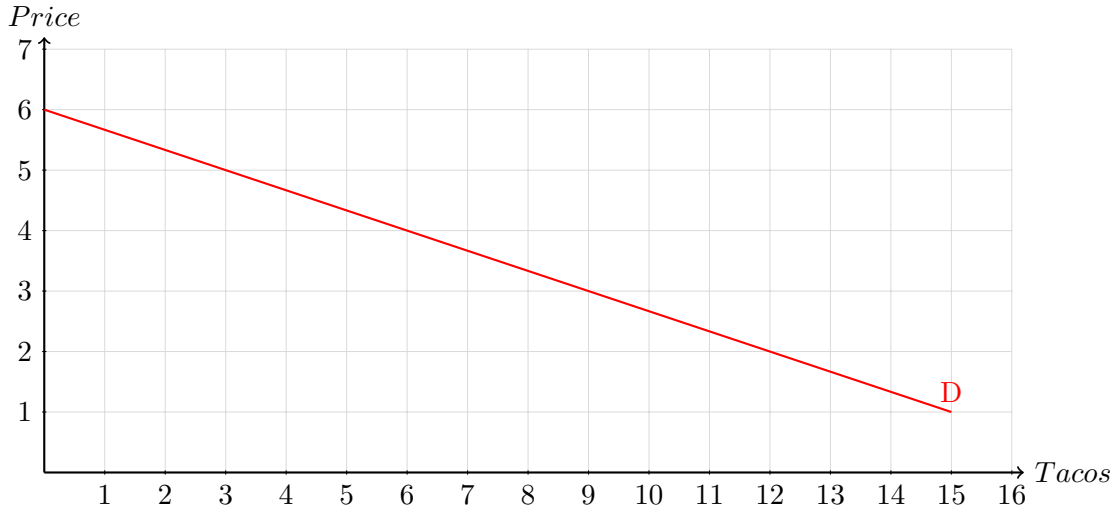
d. At the market equilibrium price how many burgers are exchanged. (Give your answer to the nearest whole number.)

Equilibrium is where $Q_S = Q_D$, which occurs when the price is \$8 and 20 units are exchanged

Problem 2. The table below provides information for the individual demand for tacos.

Price ($)	Alex's Quantity Demanded	Asa's Quantity Demand	Market Demand
1	10	5	15
2	8	4	12
3	6	3	9
4	4	2	6
5	2	1	3
6	0	0	0

a. On the graph below, draw the market demand for tacos.



Problem 3. The situations below include an event and a market. For each situation, determine how the event would affect either the supply or demand curve, the market equilibrium price, and market quantity.

a. **Event: Increase in the cost of steel**

- **Market: Cars**
- **Effect:**
  - The cost of production for cars increases due to the higher steel price.
  - **Supply decreases** (shift left).
  - Equilibrium price increases, equilibrium quantity decreases.

b. **Event: Discovery of health benefits of blueberries**

- **Market: Blueberries**
- **Effect:**
  - Consumer preference increases for blueberries due to the health benefits.
  - **Demand increases** (shift right).
  - Equilibrium price and equilibrium quantity both increase.

c. **Event: Government provides subsidies to corn farmers**

- **Market: Corn**
- **Effect:**
  - Production costs decrease for corn farmers.
  - **Supply increases** (shift right).
  - Equilibrium price decreases, equilibrium quantity increases.

d. **Event: A major technological advancement in solar panel production**

- **Market: Solar panels**
- **Effect:**
  - The cost of producing solar panels decreases due to new technology.
  - **Supply increases** (shift right).
  - Equilibrium price decreases, equilibrium quantity increases.

e. **Event: A rise in consumer income**

- **Market: Luxury watches**
- **Effect:**
  - Luxury watches are a normal good, so higher income increases demand.
  - **Demand increases** (shift right).
  - Equilibrium price and equilibrium quantity both increase.

f. **Event: Severe drought reduces wheat harvest**

- **Market: Bread**

- **Effect:**
  - Wheat is an input for bread, and a drought reduces its availability.
  - **Supply decreases** for bread (shift left).
  - Equilibrium price increases, equilibrium quantity decreases.

g. **Event: Introduction of a popular streaming music platform**

- **Market: CDs**
- **Effect:**
  - Streaming services are substitutes for CDs, reducing the demand for CDs.
  - **Demand decreases** (shift left).
  - Equilibrium price and equilibrium quantity both decrease.

h. **Event: Increase in the price of coffee**

- **Market: Tea**
- **Effect:**
  - Tea is a substitute for coffee, so a price increase in coffee makes tea more attractive.
  - **Demand increases** for tea (shift right).
  - Equilibrium price and equilibrium quantity both increase.

i. **Event: A major advertising campaign for electric vehicles (EVs)**

- **Market: Electric vehicles (EVs)**
- **Effect:**
  - The advertising campaign increases consumer awareness and preference for EVs.
  - **Demand increases** (shift right).
  - Equilibrium price and equilibrium quantity both increase.

j. **Event: Increased awareness of the environmental impact of plastic**

- **Market: Plastic bags**
- **Effect:**
  - Consumer preference decreases due to environmental concerns.
  - **Demand decreases** (shift left).
  - Equilibrium price and equilibrium quantity both decrease.

Problem 4. For each of the following demand and supply functions, determine the equilibrium price and quantity for cookies.

a. $Q_D = 35–5P$
$Q_S = 5 + 10P.$

$Q_D = Q_S$
$35–5P = 5 + 10P$
$30 = 15P$
$P = 2$
$Q_D = 35–5(2)$
$Q_D = 25$

- Equilibrium price: $2
- Equilibrium quantity: 25

b. $Q_D = 20–10P$
$Q_S = 10 + 10P$.

$Q_D = Q_S$
$20–10P = 10 + 10P$
$10 = 20P$
$P = 0.50$
$Q_D = 20–10(0.50)$
$Q_D = 15$

- Equilibrium price: $0.50
- Equilibrium quantity: 15

c. $Q_D = 8–P$
$Q_S = 3 + 4P$.

$Q_D = Q_S$
$8–P = 3 + 4P$
$5 = 5P$
$P = 1$
$Q_D = 8–(1)$
$Q_D = 7$

- Equilibrium price: $1
- Equilibrium quantity: 7

d. For parts a, b, and c, if the price was $1, would there be a shortage or surplus? By how much?

a. $Q_D = 35 - 5(1) = 30$; $Q_S = 5 + 10(1) = 15$; Shortage of 15
b. $Q_D = 20 - 10(1) = 10$; $Q_S = 10 + 10(1) = 20$; Surplus of 10
c. $1 is the equilibrium price, there is neither a surplus nor shortage