

# The Ultimate Unit 2 Cheat Sheet

Everything you need to know about the supply & demand, elasticity, economic surplus, and government intervention

## Demand

**Quantity Demand:** the number of people willing and able to buy a good or service at a given price.

**Law of Demand:** inverse relationship between price and quantity demanded.

**Substitute Goods:** two goods that can be used for the same purpose. An increase in the price of one leads to an increase in demand for the other.

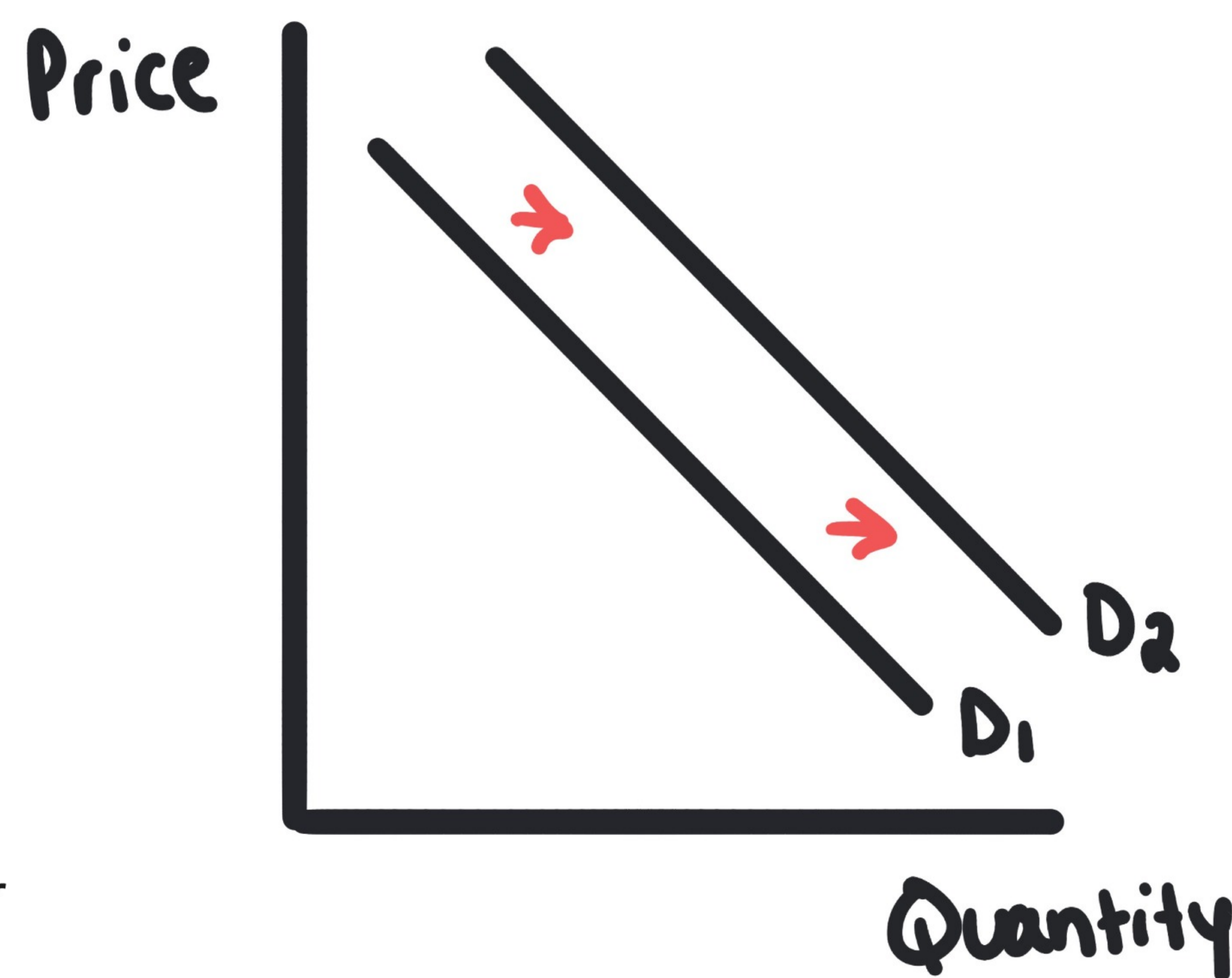
**Complementary Goods:** goods often consumed together. An increase in the price of one causes a decrease in demand for the other.

## Supply

**Quantity Supplied:** the number of firms willing and able to sell a good or service at a given price

**Law of Supply:** direct relationship between price and quantity supplied

**Subsidy:** money given by the government to encourage the production of a good or service



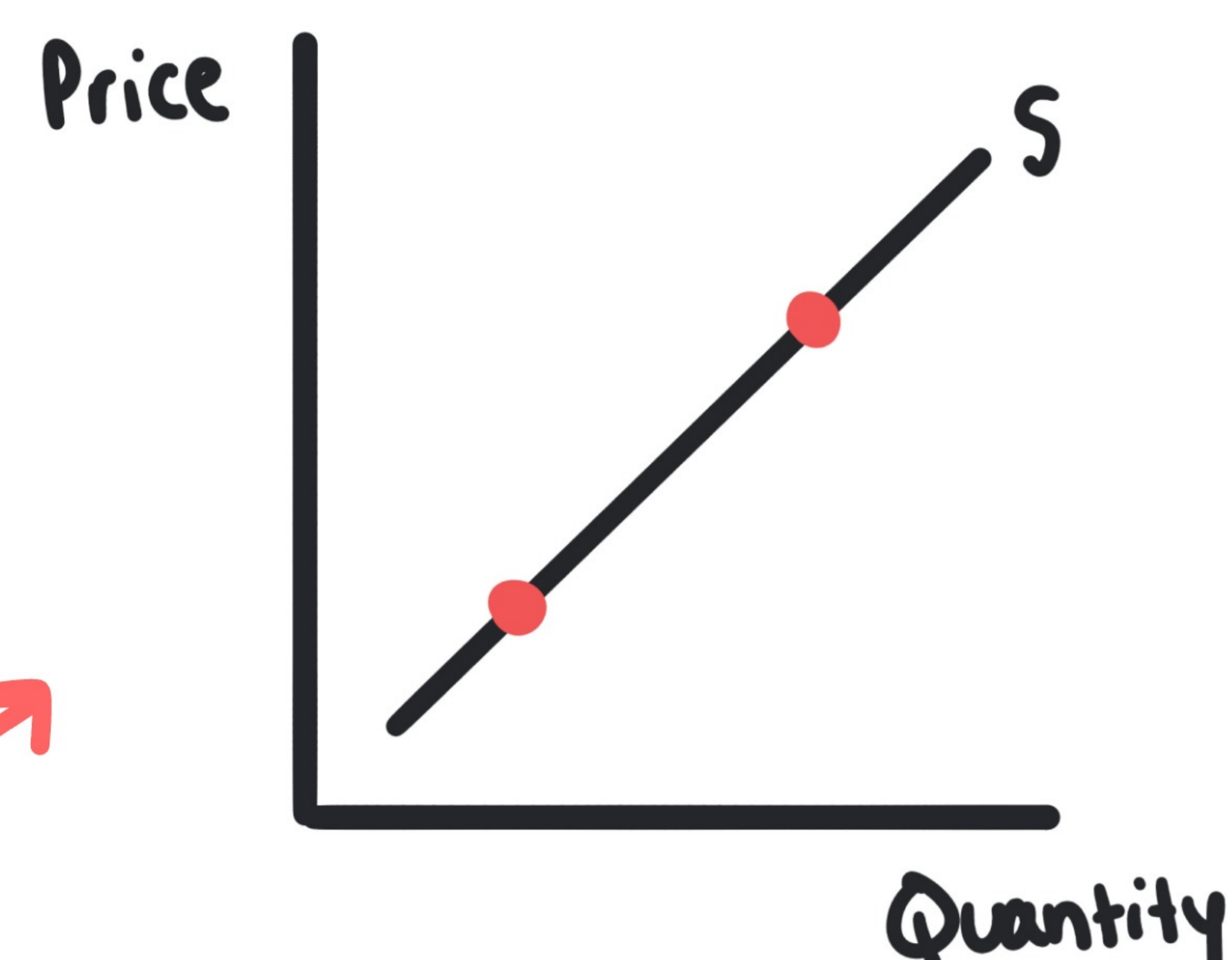
### Shifters of the Demand Curve:

1. Change in Tastes / Preferences
2. Change in income
3. Change in the price of related goods
4. Change in population
5. Change in expectations about future prices

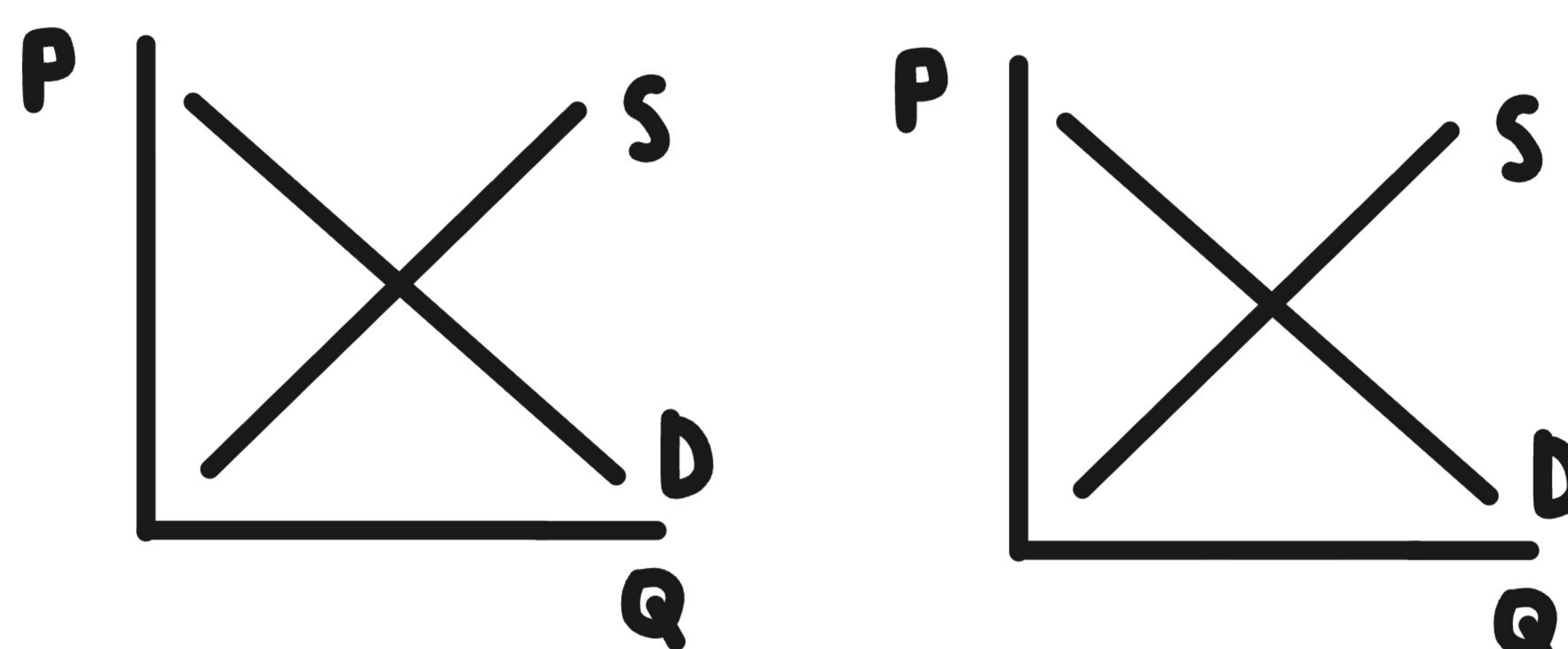
*If people expect the price of gasoline to increase in the near future, they will buy more gasoline today*

### Shifters of the Supply Curve:

1. Change in Resource Prices
2. Change in Technology or Productivity
3. Change in government policy (taxes & subsidies)
4. Change in number of sellers
5. Change in expectations about future prices



*Careful, this graph shows a change in quantity supplied, caused by a change in price. It does not show a shift in supply!*

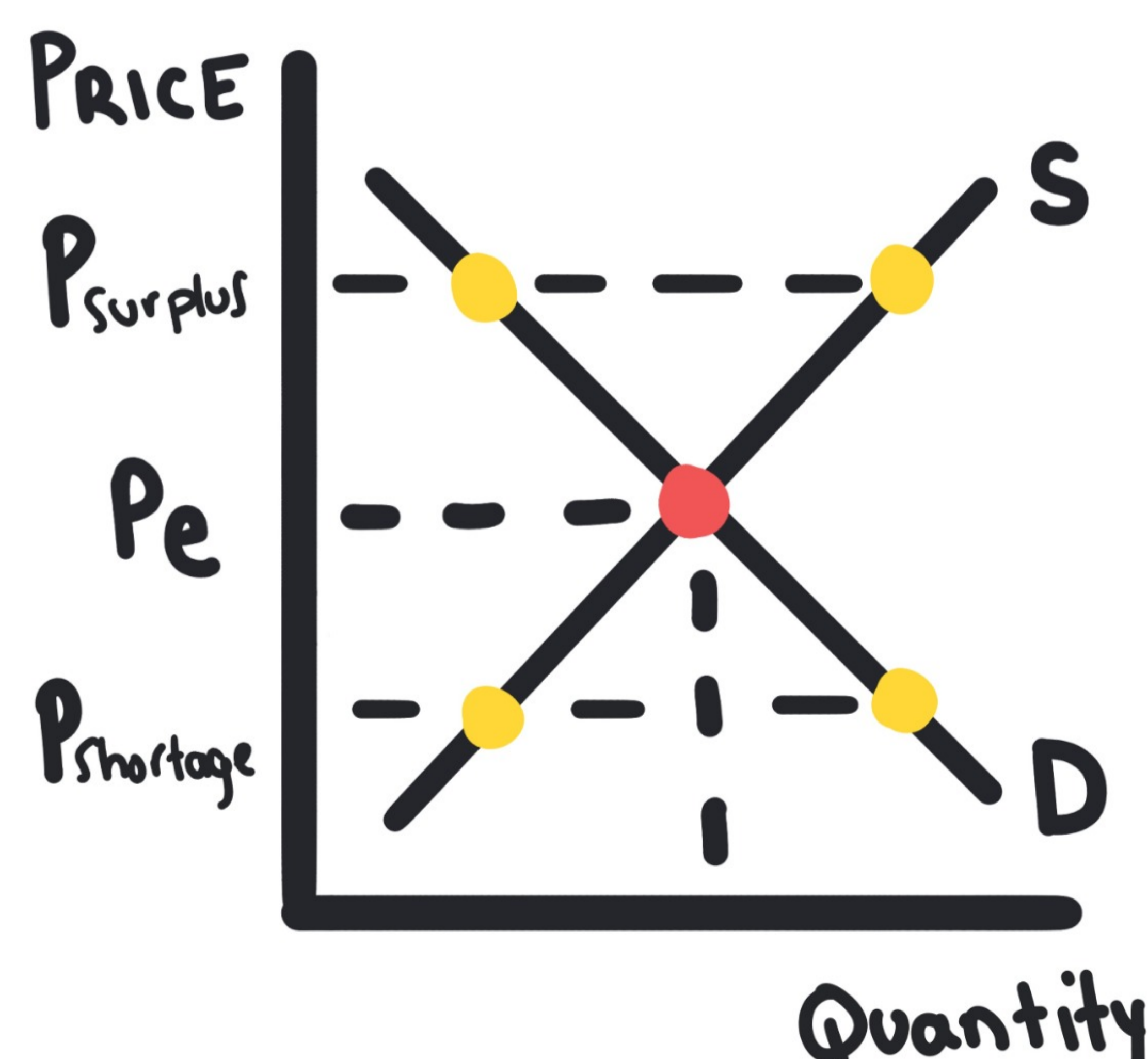


### PRACTICE:

**Left Graph:** A key input to produce Good Z increased dramatically.

**Right Graph:** Sellers expect the price of their good to increase in the coming months.

## Equilibrium & Disequilibrium



**Equilibrium:** the state where the quantity demanded equals the quantity supplied at a specific price.

**Disequilibrium:** any time the market price is not at equilibrium, causing a surplus or shortage.

#### Shortage

- Occurs when  $P < P_e$
- $Q_d > Q_s$

#### Surplus

- Occurs when  $P > P_e$
- $Q_s > Q_d$

When supply, demand, or both shift on the graph, we end up at a new equilibrium, often with a different price or quantity

**Scenario 1:** An increase in the price of fertilizer shifts the supply of apples to the left

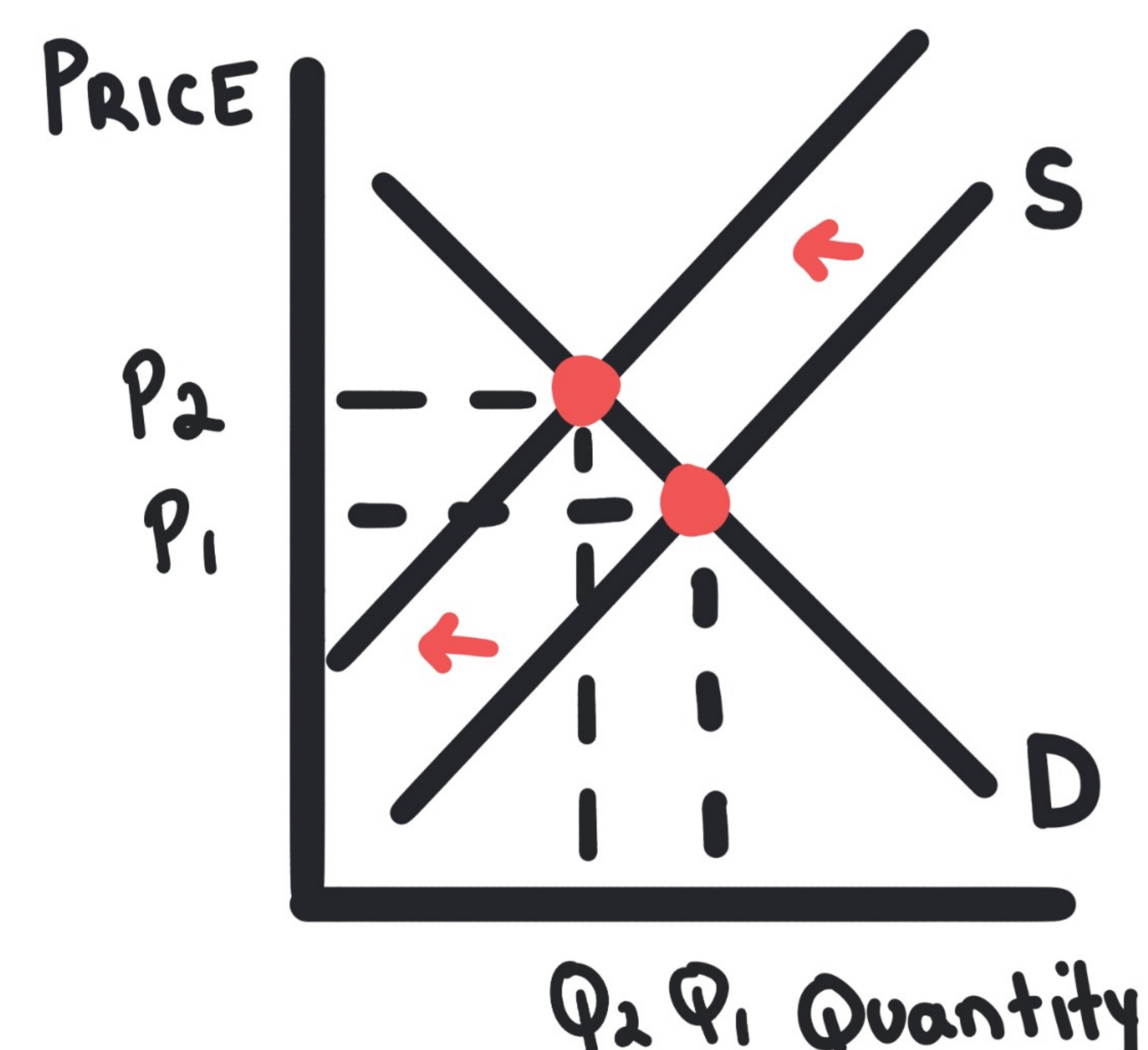
Price  $\uparrow$  Quantity  $\downarrow$

**Scenario 2:** A new TikTok trend makes retro digital cameras more popular

Price  $\uparrow$  Quantity  $\uparrow$

**Scenario 3:** New machinery makes green tea farmers more productive & new studies show additional health benefits to drinking green tea

Price  $\leftrightarrow$  Quantity  $\uparrow$



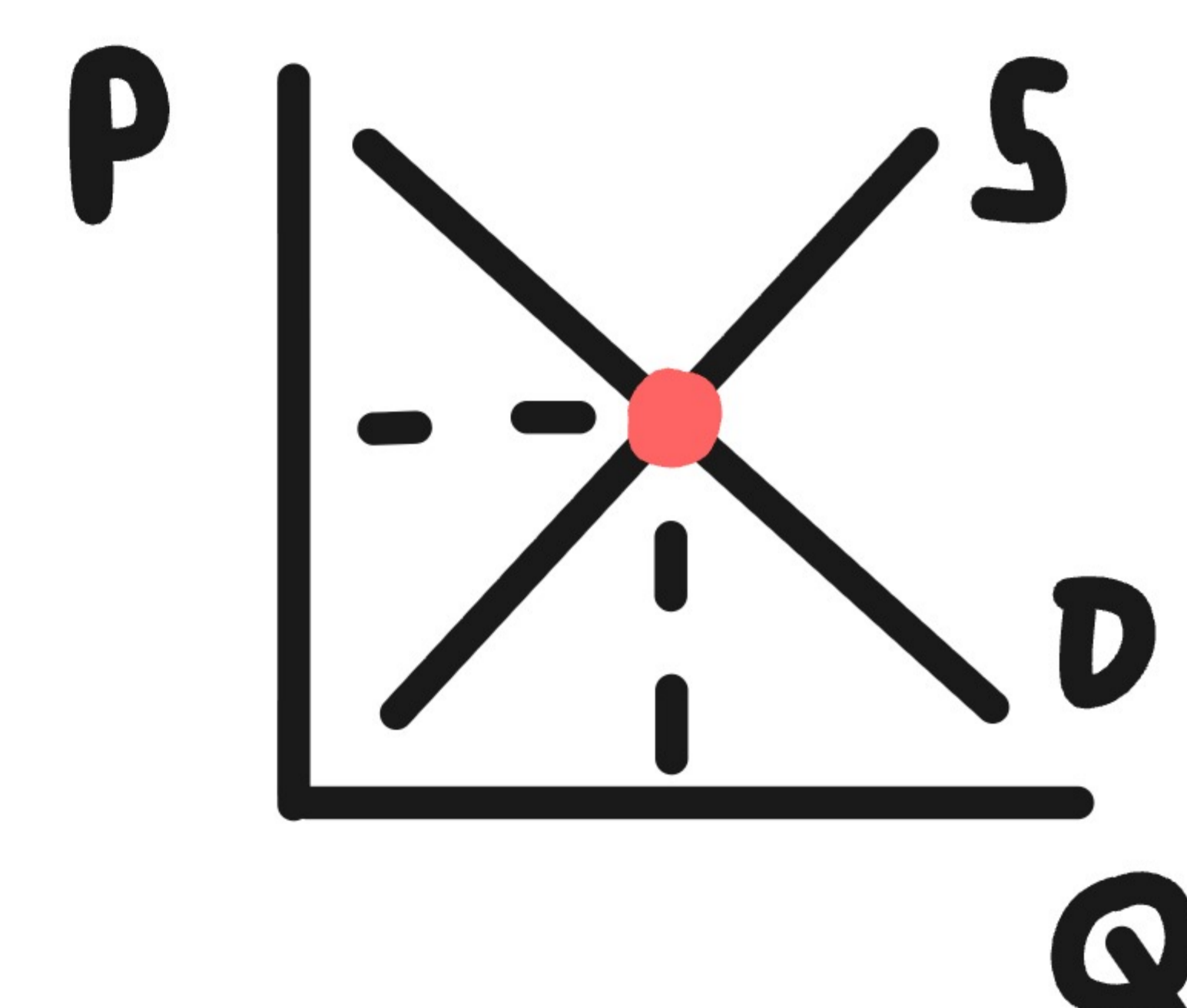
## Knowledge Check

Check your answers at [apdojo.com/ultimateCramSheet/answer-keys](https://apdojo.com/ultimateCramSheet/answer-keys)

a. Good X has an income elasticity of 2.5. If there is a 10% decrease in someone's income, the demand for Good X would change by what percentage? Is Good X a normal or inferior good?

b. The market equilibrium price for Good Y is \$25. The current price is \$20. Will there be a shortage or surplus of Good Y?

c. The price of milk increases dramatically. Show the impact to the supply & demand graph for cereal.



# Elasticity

**Price Elasticity of Demand:** measures how much the quantity demanded responds to a change in price;

**Elastic ( $E > 1$ ):** quantity changes significantly when price changes; consumers are very sensitive to price (e.g., luxury goods or items with many substitutes).

**Inelastic ( $E < 1$ ):** quantity changes very little when price changes; consumers are not sensitive to price (e.g., medicine or gasoline)

**Unit Elastic ( $E = 1$ ):** the percentage change in quantity is exactly equal to the percentage change in price.

**Perfectly Elastic ( $E = \infty$ ):** any price increase causes quantity demanded to drop to zero; the demand curve is horizontal.

**Perfectly Inelastic ( $E = 0$ ):** quantity demanded remains the same regardless of price changes; the demand curve is vertical.

**Price Elasticity of Supply:** measures how much the quantity supplied responds to a change in price.

**Factors Influencing Elasticity of Supply:**

- Time to Change Production: the more time a firm has to change its production processes, the more elastic supply
- Substitutability of Resources: the more interchangeable the resources are to produce other similar goods, the more elastic supply

**Cross-Price Elasticity:** measures how the quantity of one good changes when the price of another good changes; positive (+) for substitutes and negative (-) for complements.

**Income Elasticity:** measures how quantity demanded changes as consumer income changes; positive (+) for normal goods and negative (-) for inferior goods.

Elasticity of Demand / Supply

$$E = \frac{\% \Delta Q_d}{\% \Delta P}$$

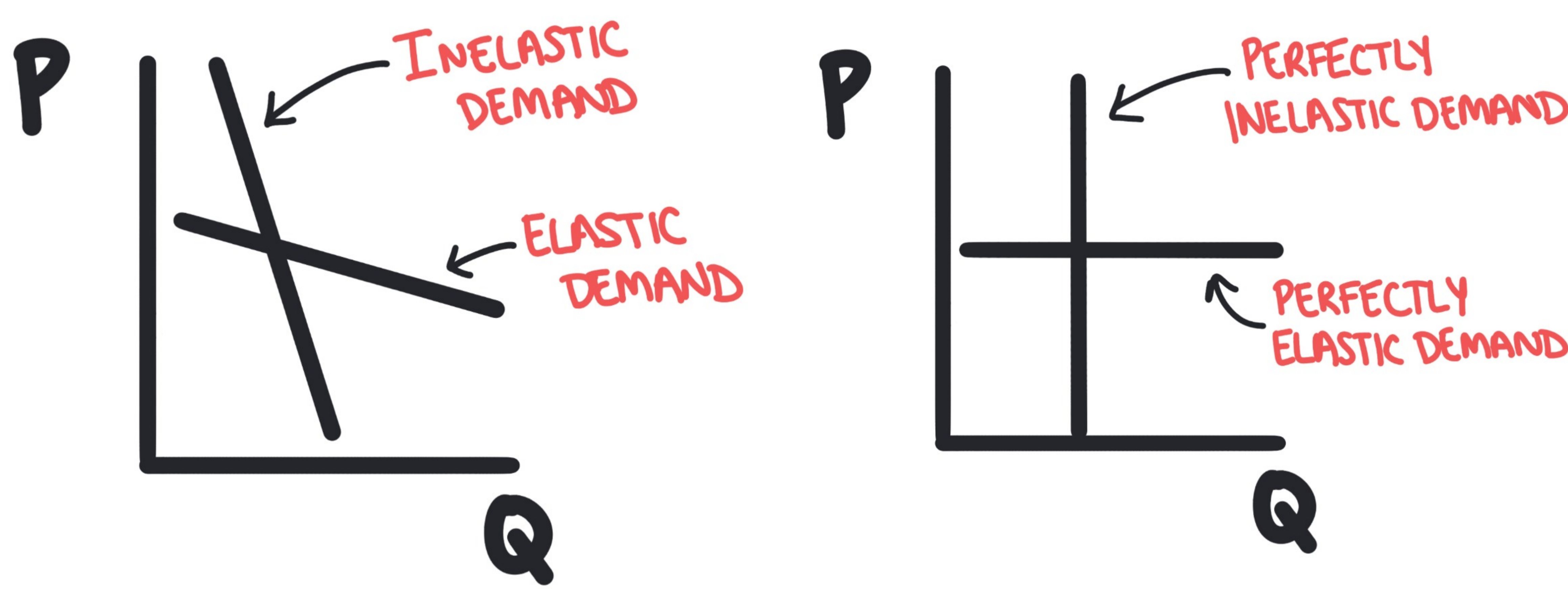
$$E = \frac{\% \Delta Q_s}{\% \Delta P}$$

Cross Price Elasticity

$$E = \frac{\% \Delta Q_{dy}}{\% \Delta P_x}$$

Income Elasticity

$$E = \frac{\% \Delta Q_d}{\% \Delta I}$$



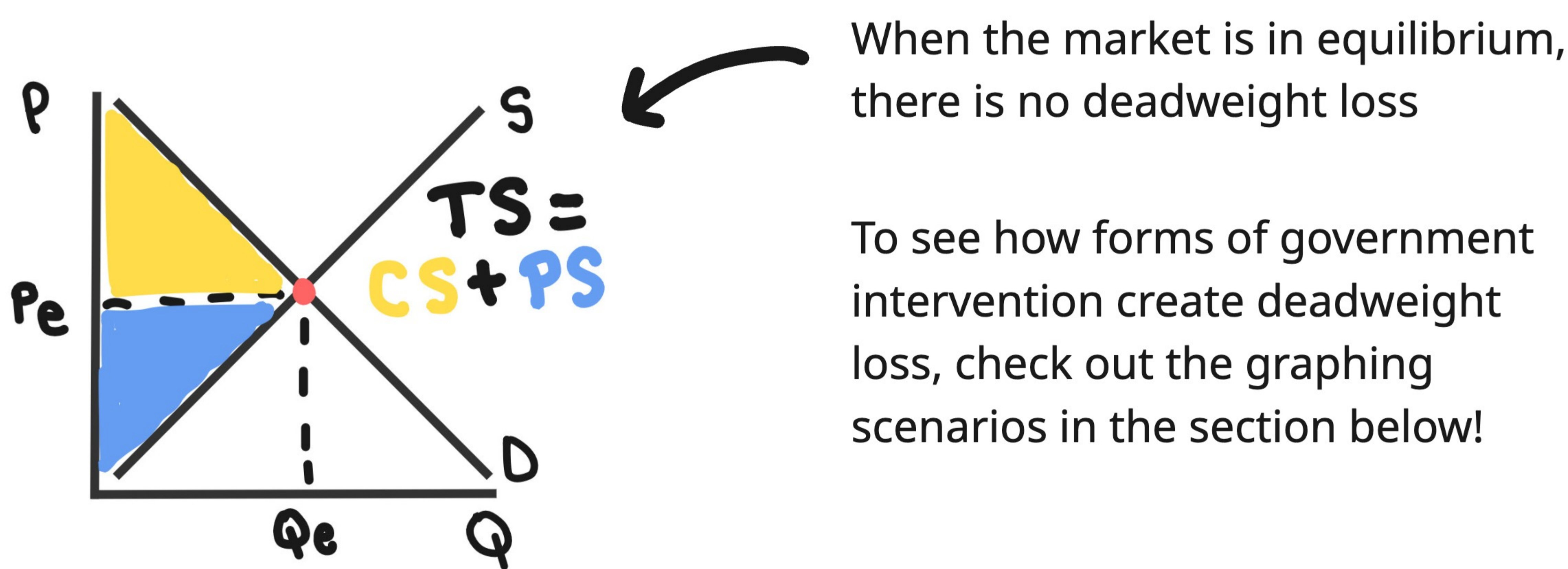
## Consumer Surplus, Producer Surplus & Deadweight Loss

**Consumer Surplus (CS):** The difference between the maximum price a consumer is willing to pay and the actual price they pay; represented by the area below the demand curve and above the equilibrium price.

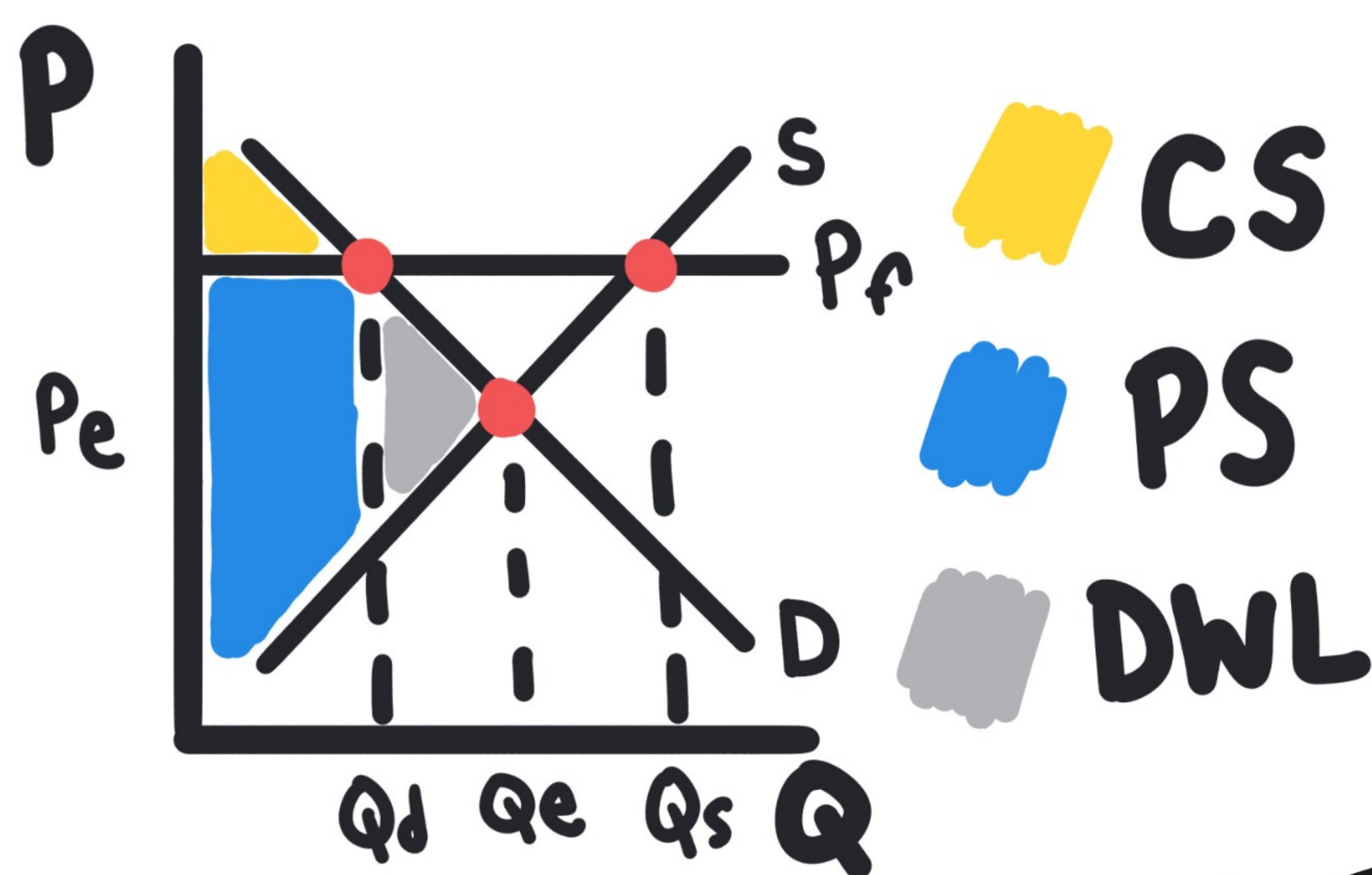
**Producer Surplus (PS):** the difference between the actual price a producer receives and the minimum price they were willing to accept; represented by the area above the supply curve and below the equilibrium price.

**Total Surplus (TS):** the sum of Consumer Surplus and Producer Surplus ( $TS = CS + PS$ ); it represents the total net benefit to society and is maximized at market equilibrium.

**Deadweight Loss:** the sum of Consumer Surplus and Producer Surplus ( $TS = CS + PS$ ); it represents the total net benefit to society and is maximized at market equilibrium.



## Price Controls, Taxes & Tariffs



**Price Ceiling:** A legally established maximum price that can be charged for a good or service.

- To be binding (effective), it must be set below the equilibrium price
- Typically leads to a shortage ( $Q_d > Q_s$ ).

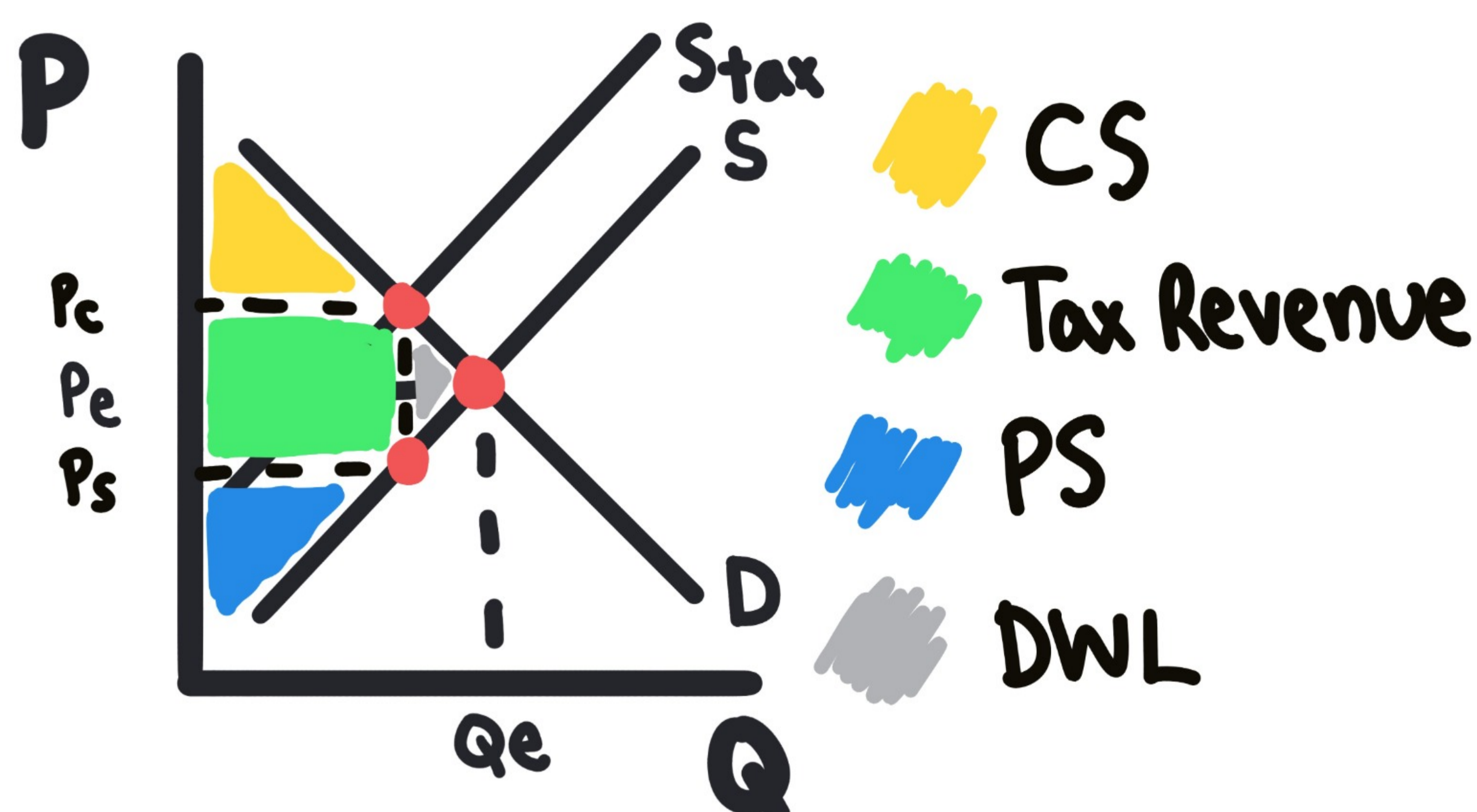
**Price Floor:** A legally established minimum price that can be charged for a good or service.

- To be binding (effective), it must be set above the equilibrium price,
- Typically leads to a surplus ( $Q_s > Q_d$ ).

**Per-Unit Tax:** a tax levied on the production or sale of a specific good or service. It shifts the supply curve upward, increases the price buyers pay, decreases the price sellers receive, reduces the equilibrium quantity, and creates deadweight loss.

**Tax Incidence:** The distribution of the burden of a tax between buyers and sellers. The incidence depends on the relative price elasticities of demand and supply; the more inelastic side bears a larger share of the tax burden.

**Quota:** An upper limit set by the government on the quantity of a good that can be bought or sold.



**Tariff:** A tax imposed by the government on imported goods, raising the price of imports and reducing the quantity imported.

- Governments may implement tariffs to protect domestic producers, help grow infant industries, or for national security reasons

**Impact of Tariffs:**

- A tariff increases the price of imports (the "world price"), increasing surplus for domestic producers, reducing surplus for domestic consumers, generating government tax revenue, and creating deadweight loss

