

AP Dojo

**AP Microeconomics
Unit 2 - Cheat Sheet**

The Law of Demand: as the price of a good increases, quantity demanded for that good decreases

Elasticity of Demand: refers to how sensitive quantity demanded is to a change in price


→ We use the elasticity of demand formula to find out how sensitive quantity demanded is to a change in price

Elastic Demand: a small change in price leads to a large change in quantity demanded (Elasticity > 1)

Inelastic Demand: quantity demanded for a good is relatively unaffected by changes in price (Inelastic < 1)

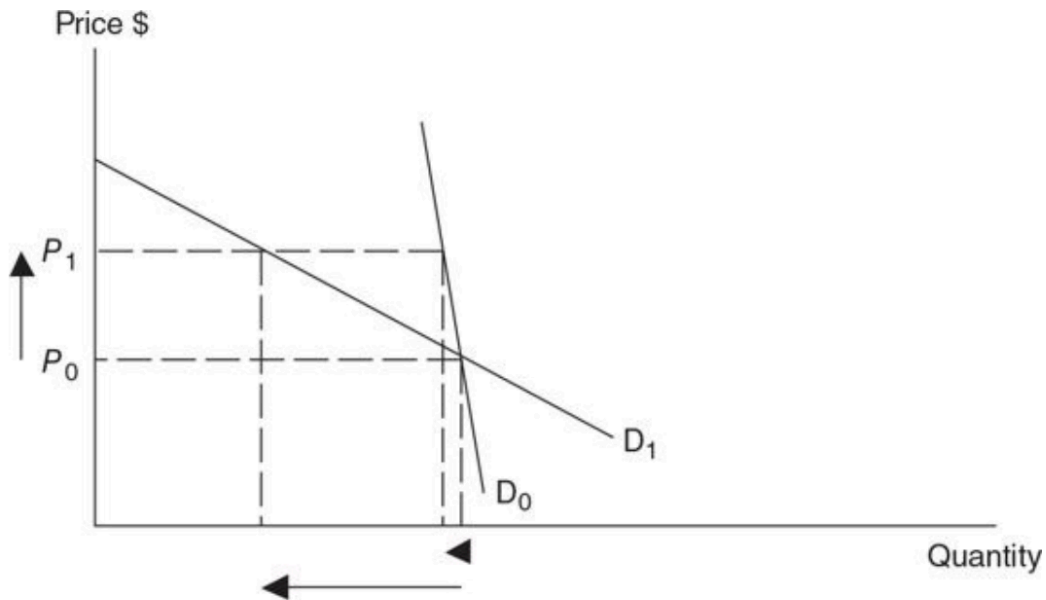
The price of apples increases 30% and QD decreases 20%

Midpoint Formula

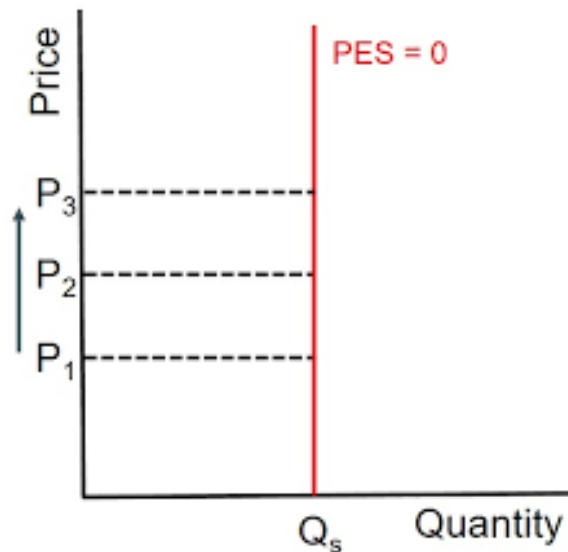
$$E = \frac{\% \Delta Q_D}{\% \Delta P} \rightarrow \frac{\frac{Q_2 - Q_1}{\frac{Q_1 + Q_2}{2}}}{\frac{P_2 - P_1}{\frac{P_1 + P_2}{2}}}$$


Understand the Value:

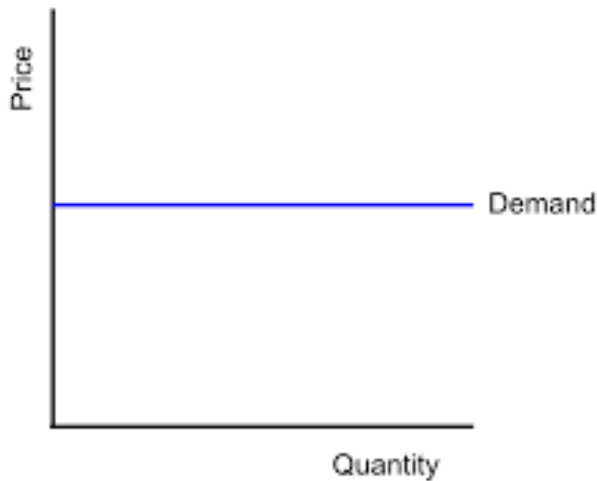
When elasticity is:	If price increases:	If price decreases:	Elasticity
$E > 1.0$	Revenue decreases	Revenue increases	Elastic
$E < 1.0$	Revenue increases	Revenue decreases	Inelastic
$E = 1.0$	Revenue doesn't change	Revenue doesn't change	Unit Elastic



Perfectly Inelastic Demand: situation where there is no change in quantity demanded even there is change in price of the goods



Perfectly Elastic Demand: situation where any price increase would cause the quantity demanded to fall to zero



Elasticity of Supply: refers to how sensitive quantity supplied is to a change in price

Midpoint Formula

$$E = \frac{\% \Delta Q_D}{\% \Delta P} \rightarrow \frac{\frac{Q_2 - Q_1}{\frac{Q_1 + Q_2}{2}}}{\frac{P_2 - P_1}{\frac{P_1 + P_2}{2}}}$$

A red arrow points from the $\% \Delta Q_D$ term to the numerator of the second fraction, and another red arrow points from the $\% \Delta P$ term to the denominator of the second fraction.

Cross-Price Elasticity: the sensitivity of consumption of good X to a change in the price of good Y
→ Tells us if goods are substitutes or complementary goods

Give me an example of substitutes goods and a cross price elasticity value for those goods?

Apples: Negative demand change (-)
Oranges: Negative price change (-)

Positive elasticity value --> Substitute goods

Give me an example of complementary goods and a cross price elasticity value for those goods?

Cream Cheese: Negative demand change (-) (-30%)
Bagels: Positive price change (+) (+20%)

Negative cross price elasticity value --> complementary goods

Example: If the price of Coca-Cola increases, what happens to the quantity demanded for Pepsi?

+ / + = + (substitutes)

- / - = + (substitutes)

Example: If the price of pool entry tickets decreases, what happens to the quantity demanded for swimsuits?

+ / - = - (complementary goods)

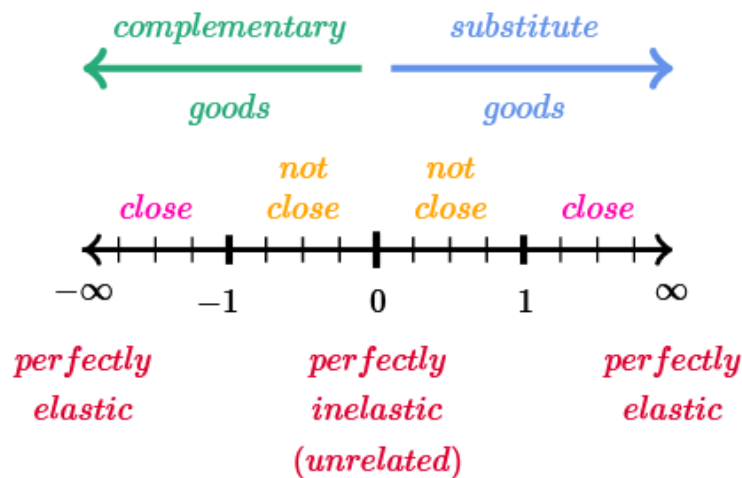
- / + = - (complementary goods)

Cross Price
Elasticity of
Demand Formula

=

$$\frac{\text{Percent Change in a Quantity of Good A}}{\text{Percent Change in the Price of Good B}}$$





Income Elasticity of Demand: measures how sensitive quantity demanded is to changes in income

Income Elasticity of Demand Formula

$$\text{Income Elasticity of Demand} = \frac{\text{Percentage Change in Quantity Demand } (\Delta D/D)}{\text{Percentage Change in Income } (\Delta I/I)}$$

$$\text{Income Elasticity of Demand} = \frac{(D_1 - D_0) / (D_1 + D_0)}{(I_1 - I_0) / (I_1 + I_0)}$$

Normal Good: good that experiences an increase in demand due to an increase in a consumer's income

Positive elasticity value ($E > 0$)

People buy more as income increases
Income (+)



Inferior Good: good that experiences a decrease in demand due to an increase in a consumer's income

Negative elasticity value ($E < 0$)



Impact of Taxes:

“The government takes, efficiency breaks”

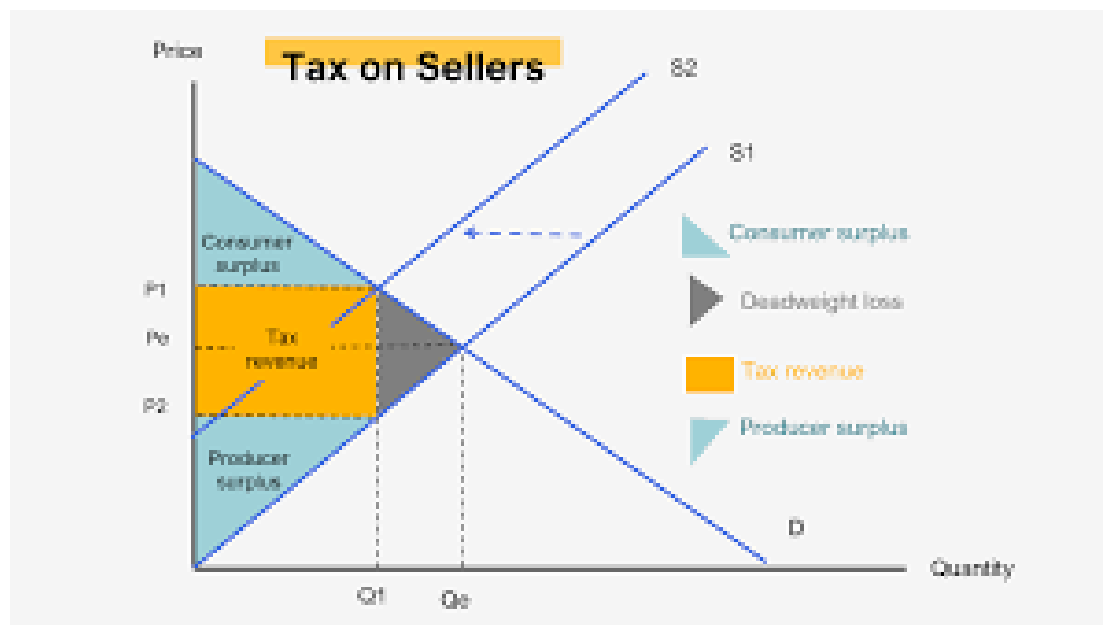
From Two Groups to Three:

- Originally, when a product is bought and sold, only two groups are involved: producers and consumers
- The benefit of the transaction is shared between the two. The consumers get some benefit, the producer gets some benefit
- When the government implements a tax, there are three groups involved: producers, consumers, and the government.
- The benefit of the transaction is shared by the three groups. The consumers get some benefit (less than before), the producers get some benefit (less than before), and the government gets some benefit

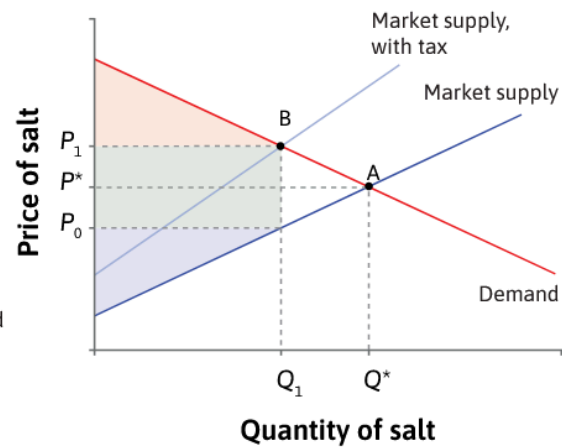
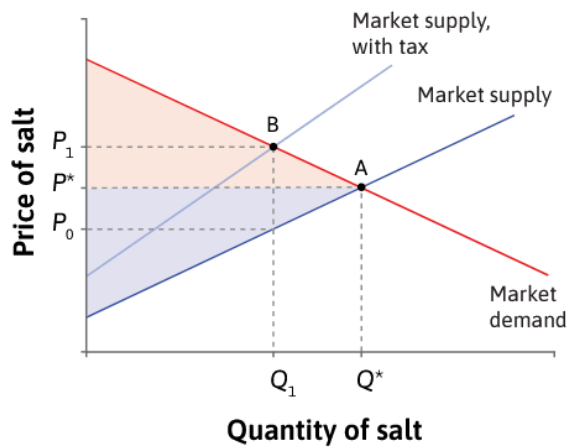
How to Visualize the Impact of a Tax:

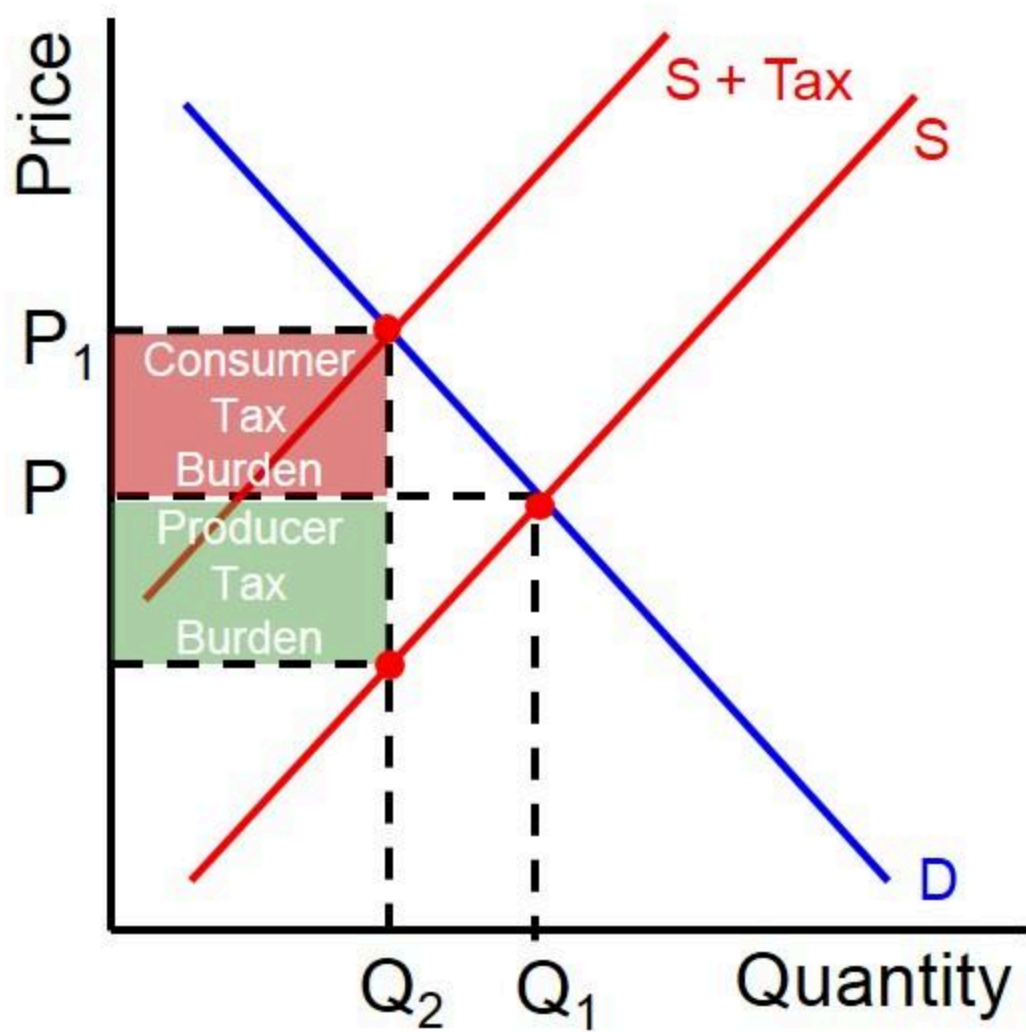
- Anything that increases the cost of production can shift the supply curve to the left
- A tax levied on producers increases the cost of production, shifting the supply curve to the left
- At any given price, fewer producers are willing to supply the product

Deadweight Loss: the difference in production and consumption of any given product or service including government tax



- *Consumer surplus falls*: Consumers pay a higher price, P_1 , and buy less salt.
- *Producer surplus falls*: Producers supply less and receive a lower net price, P_0 .
- *Tax revenue*: A tax equal to $(P_1 - P_0)$ is paid to the government on each of the Q_1 units of salt sold (the green-shaded area).
- *Total surplus (including tax revenue) is lower*: The tax causes a deadweight loss equal to the area of the white triangle, which is $\frac{1}{2} \times (Q^* - Q_1) \times (P_1 - P_0)$.





Price Floors and Price Ceilings

Price Floor: A type of government price control that sets a legal minimum price that a good or service can be sold for (can't go lower than the ceiling)

- set ABOVE equilibrium price
- causes a surplus
- increases producer surplus and decreases consumer surplus

Price Ceiling: A type of government price control that sets a legal maximum price that a good or service can be sold for (can't go higher than the ceiling)

- set BELOW equilibrium price
 - causes a shortage
 - increases consumer surplus and decreases producer surplus
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- Price controls prevent a market from reaching equilibrium and create **deadweight loss**

