Market Failure - Market Power

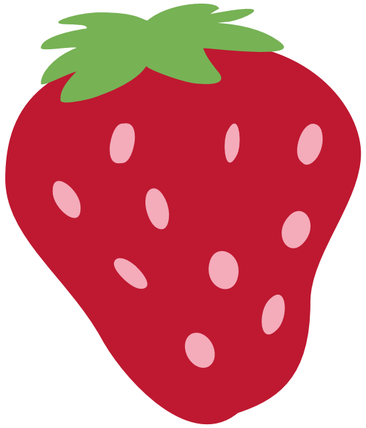
(Theory of the Firm)

HL ONLY

2.11

Types of Markets

Each firm in the world can be classified into one of these market structures.



Perfect Competition

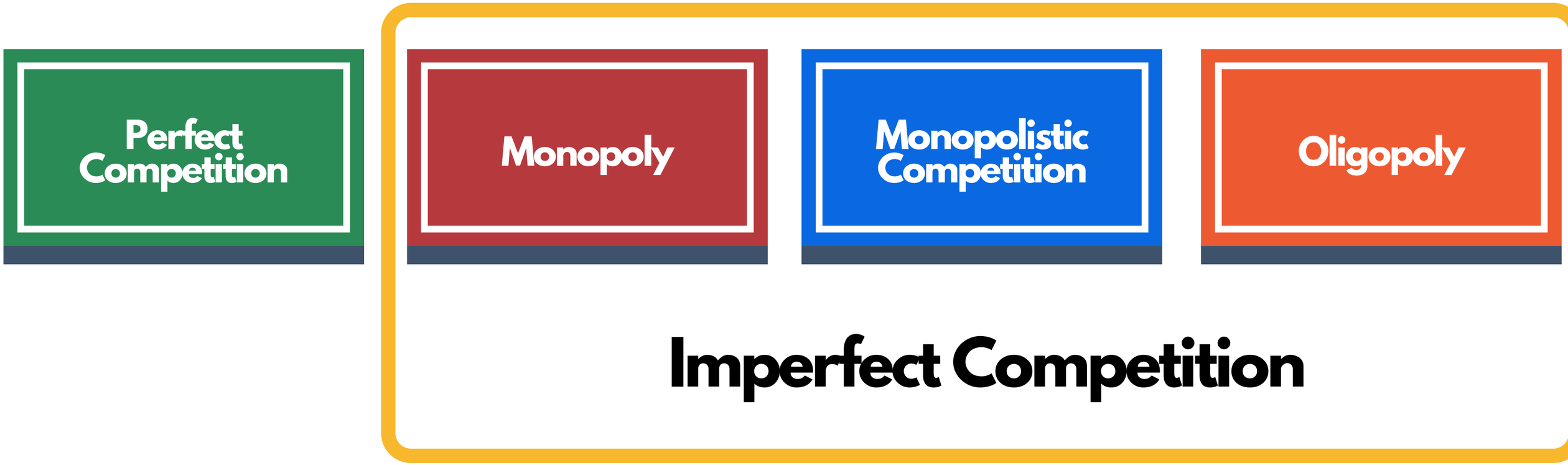
Characteristics

- Many small firms
- Identical/homogenous products (many substitutes)
- Low barriers to entry (easy for firms to enter and exit the market)
- No market power = no control over price **(Price Takers)**

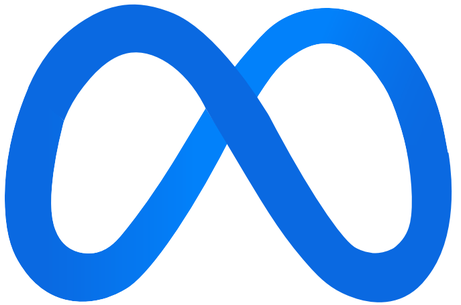
Example: Most agricultural products (strawberries, corn, potatoes)

Types of Markets

Perfect Competition is the only market that is typically efficient.



Monopoly



Characteristics

- Single/One dominant firm
- Unique product (No close substitutes)
- Extremely high barriers to entry (difficult for firms to enter and exit the market)
- Dominant market power = no control over price **(Price Maker)**

Example: NBA, Meta, Google, Local Electricity and Water Providers

Monopolistic Competition

Characteristics

- Many firms
- Differentiated products (Same-Same but different)
- Low barriers to entry (easy for firms to enter and exit the market)
- Limited market power
- Rely heavily on branding and advertising

Example: McDonald's, Starbucks, Etsy, Coca Cola, Adidas, Local restaurants

Oligopoly

Characteristics

- A few large firms
- Identical or Differentiated products
- High barriers to entry (easy for firms to enter and exit the market)
- Limited market power
- Strong **interdependence** between firms

Example: Gas Stations, Airlines, Internet/Mobile Providers,

Barriers to Entry

The term "Barriers to Entry" refer to the degree of difficulty involved with firms entering or exiting a market.

Types of Barriers

Economies of Scale

Innovative Technology

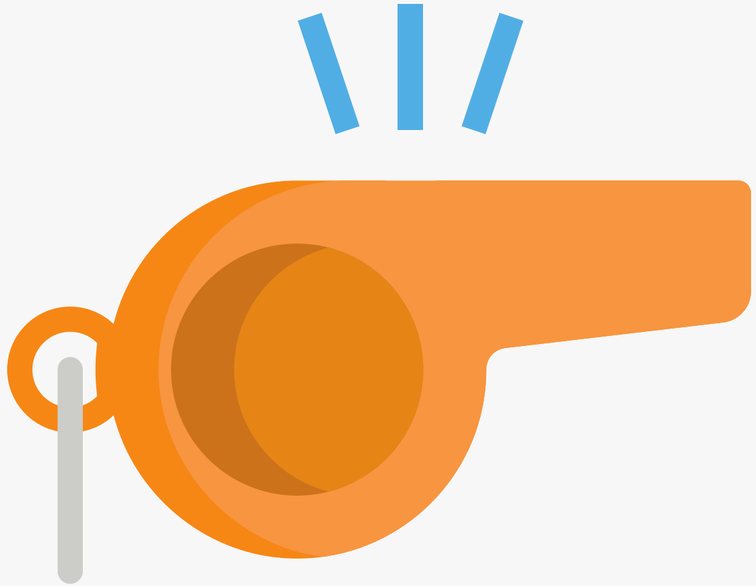
Geography or Ownership of Raw Materials

Government Created Barriers

Practice

Classify the following firms into the correct market structure.

1. Local pizzeria
2. H&M
3. Corn supplier
4. FIFA (Organisation)
5. Microsoft
6. Blueberry farmer
7. Thai Airways



Summary of Market Structures

Market Structure	Number of Firms	Products	Competition	Barriers To Entry	Market Power	Example
Perfect Competition	Many small firms	Identical	Perfect	Low	**None**	Strawberrys
Monopoly	One large firm	Unique	None	High	**Dominant**	Google
Monopolistic Competition	Many small firms	Differentiated	Strong	Low	**Some**	Clothing
Oligopoly	A few large firms	Identical or Differentiated	Limited	High	**Limited**	Cell Phone Carriers

Revenue

Revenue

Revenue is the amount of money that a firm earns. There are a few different types of revenue to consider.

Total Revenue = Price * Quantity

Marginal Revenue = The change in revenue of an additional quantity.

$$MR = \frac{\Delta TR}{\Delta Q}$$

Average Revenue

$$AR = \frac{TR}{Q}$$

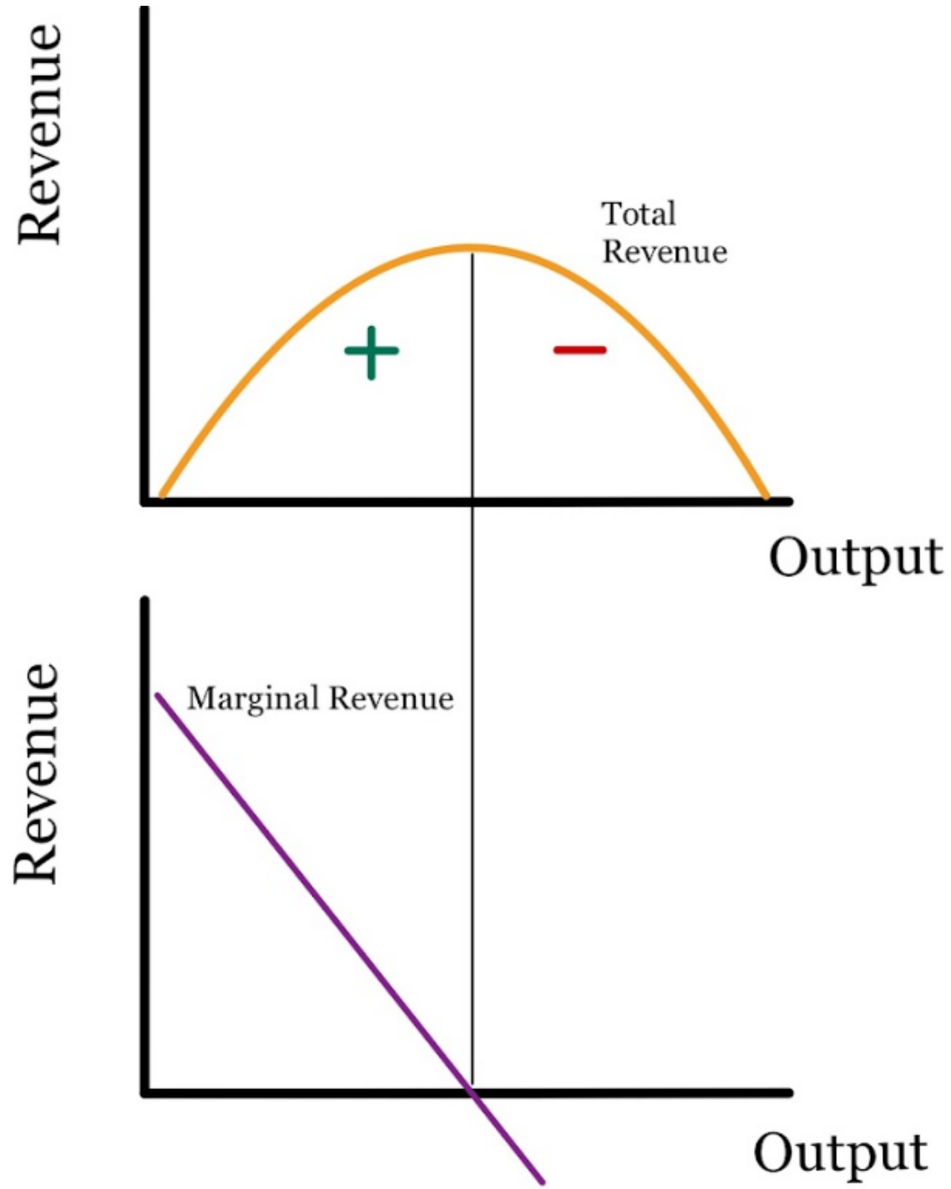
Revenue

Revenue is largely determined by a firms ability to manipulate the price.

Perfectly Competitive firms have no control over price. Due to perfectly available substitutes, they are PRICE TAKERS meaning they take the price set by the market. The price is constant (perfectly elastic). Typically, they earn zero economic profit.

Imperfect Competitive firms are able to set the price and are therefore PRICE MAKERS. Typically they earn abnormal profits.

Total and Marginal Revenue



Costs

Costs

Total Cost = Cost * Quantity

Marginal Cost = The cost of producing one additional unit.

$$MC = \frac{\Delta TC}{\Delta Q}$$

Average Cost

$$AC = \frac{TC}{Q}$$

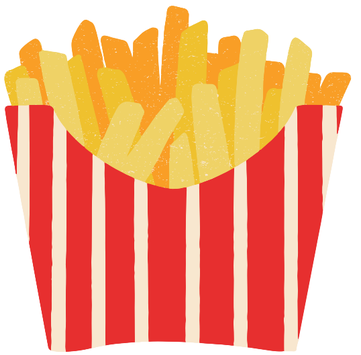
Economies of Scale

As a firm gets larger and more efficient, it is able to lower its costs making it more profitable.

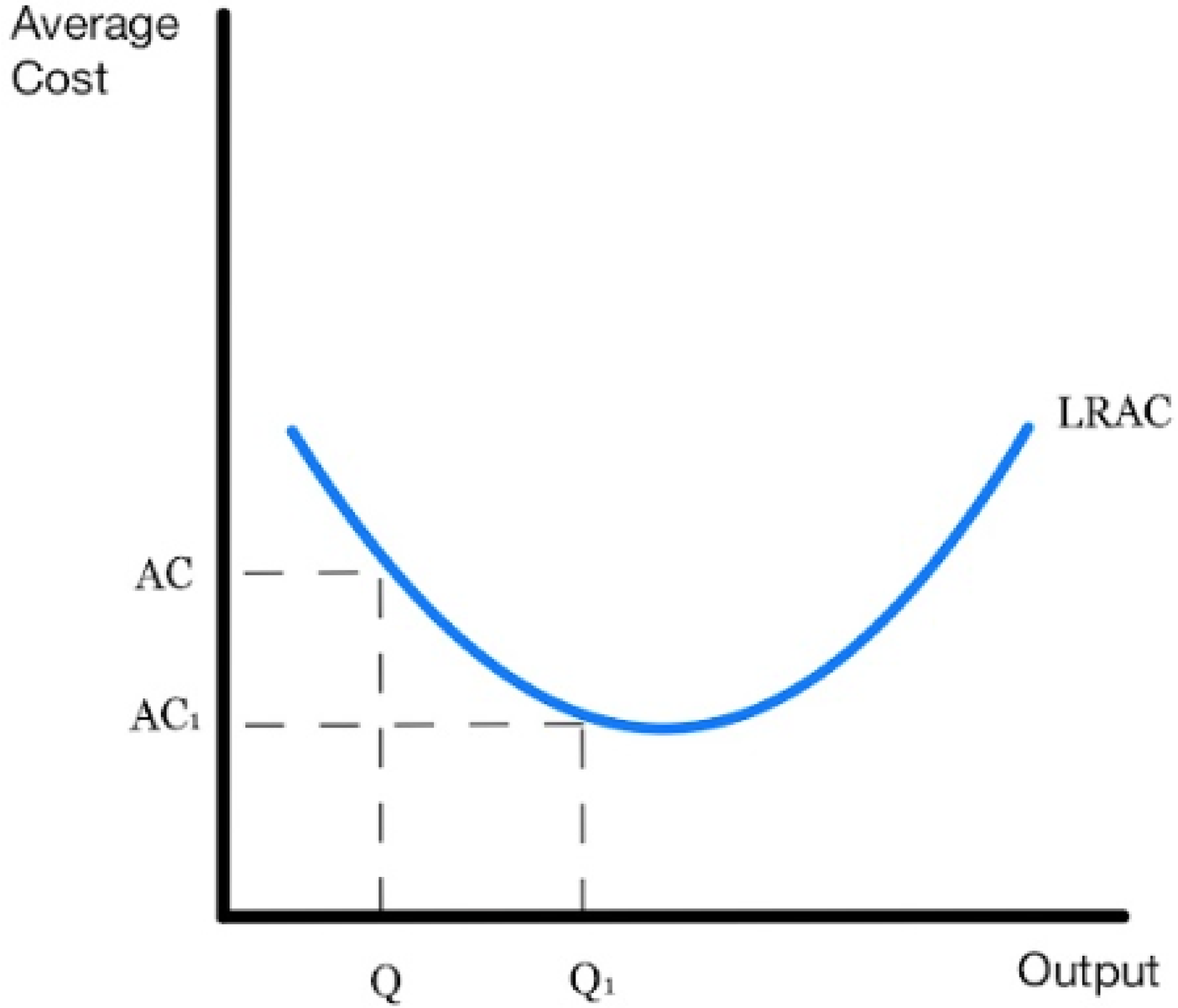
Example:

A simple burger stall is operating and business is going well. The company then decides to open another location and upgrade all of its equipment. Due to their better equipment and second revenue source, they are then able to open larger more efficient burger stalls. They start making the burgers in a separate location and transport them to each individual store.

This example demonstrates how large fast-food chains, reduce their costs as they become larger and more efficient.



LRAC Diagram



Profit and Loss

Profit and Loss

Normal Profit (also known as Zero Economic Profit/Break-Even)

TR = TC

****Normal Profit does not mean that a firm is not making money. When economists determine costs, they also include opportunity costs in addition to the monetary (explicit) costs.**

Abnormal Profit

TR > TC

Loss

TC > TR

The Relationship Between Cost and Output

Law of Diminishing Marginal Return

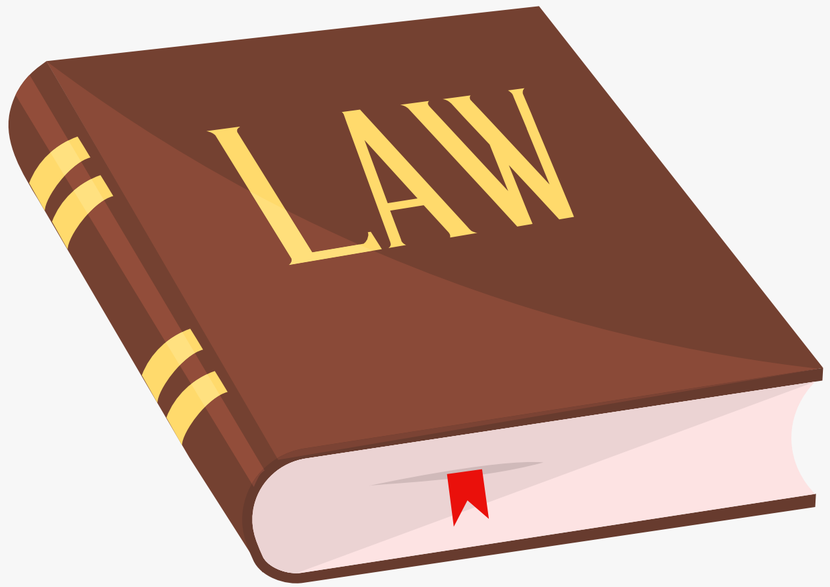
Definition

Short-Run

A period in time when at least one factor of production is fixed.

Long-Run

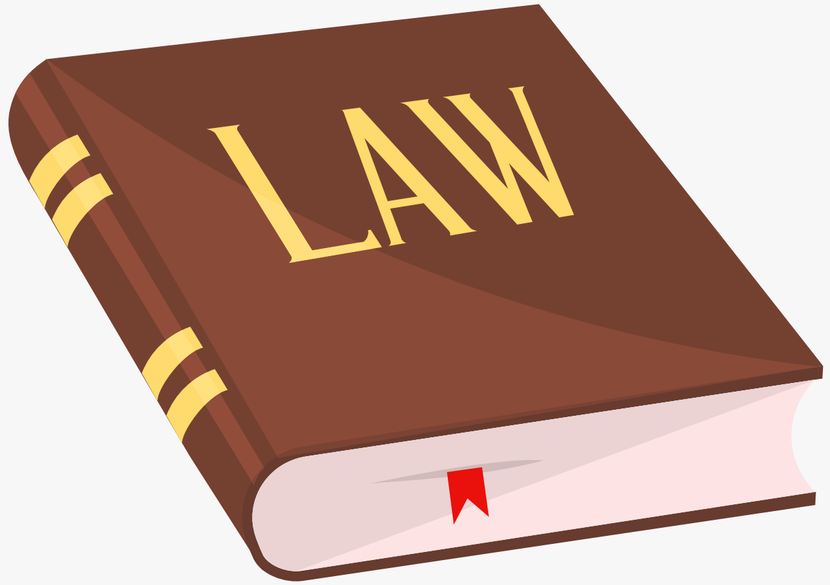
A period in time when all factors of production are variable.



Definition

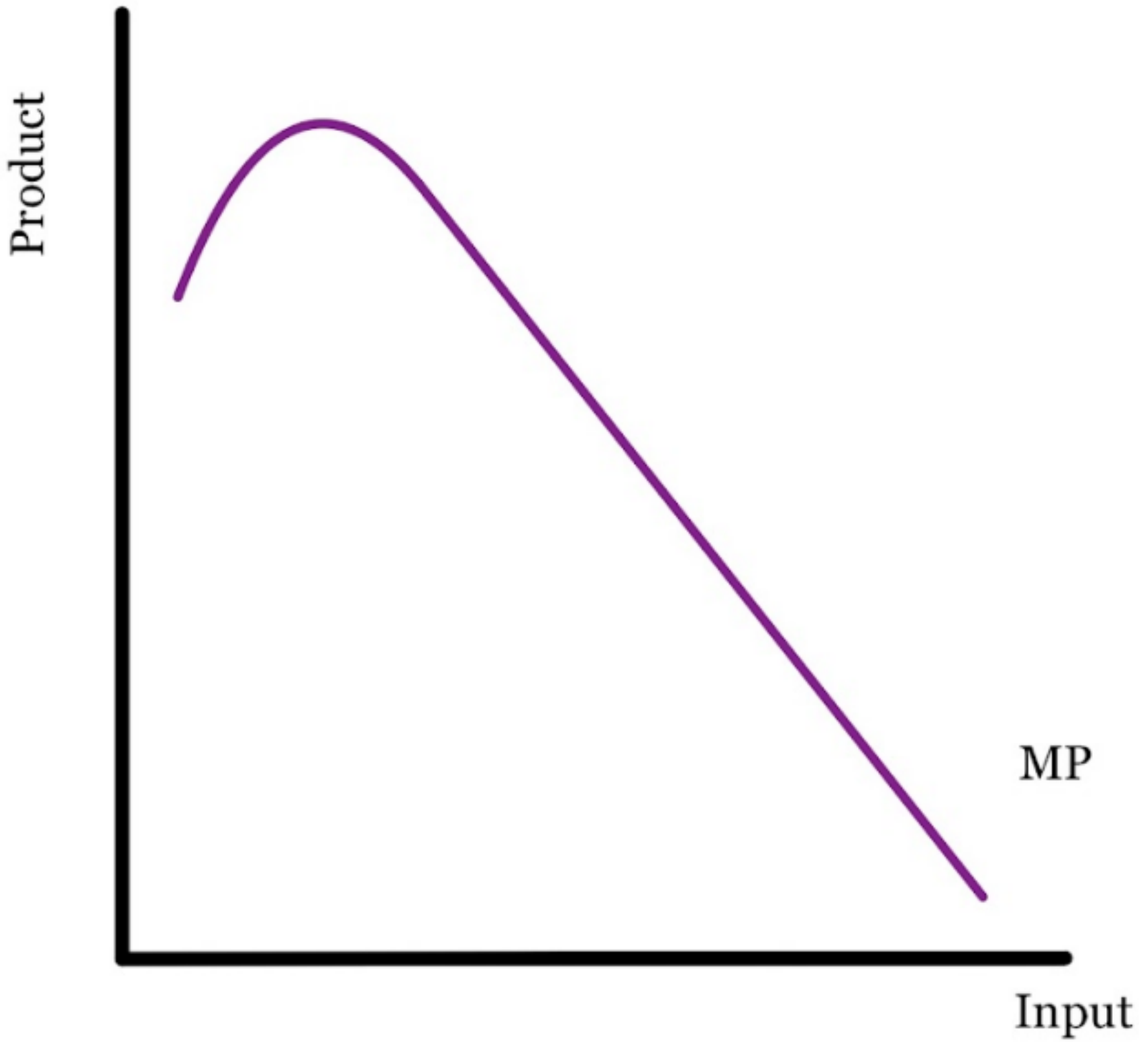
The Law of Diminishing Marginal Returns

In the short-run when at least one capital resource is fixed, the addition of inputs (typically labour) will initially result in an increase in marginal returns but will eventually diminish marginally.



Marginal Product

As seen from this marginal product curve, initially the addition of inputs results in a significant increase in the product created. However, as more inputs are added, MP plateaus and begins to fall.



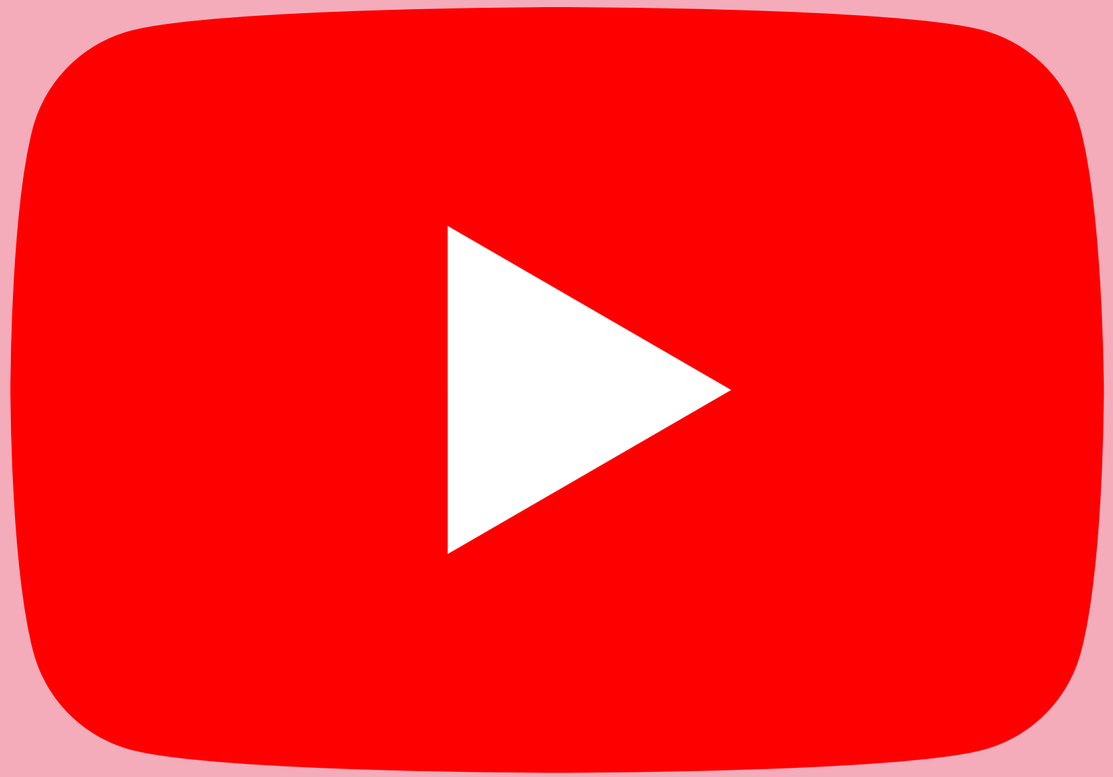
ACTIVITY

Paper Football Factory

Welcome to the paper football factory! You will have a limited supply of paper per round and limited space to produce these products! We will hire workers marginally and if you are not participating, you are tasked with charting our progress. Assume we are paying each worker 7 USD.

Paper Football Tutorial

YOUTUBE- FOLD SOMETHING



Activity Chart

In this activity, keep track of the number of workers and the amount of output they produce using the chart below. Additionally, assume that each worker makes about 7 USD.

# of Workers (Input)	Total Product (Output)	Marginal Product	Total Cost	Marginal Cost
0	0	-	0	-
1				

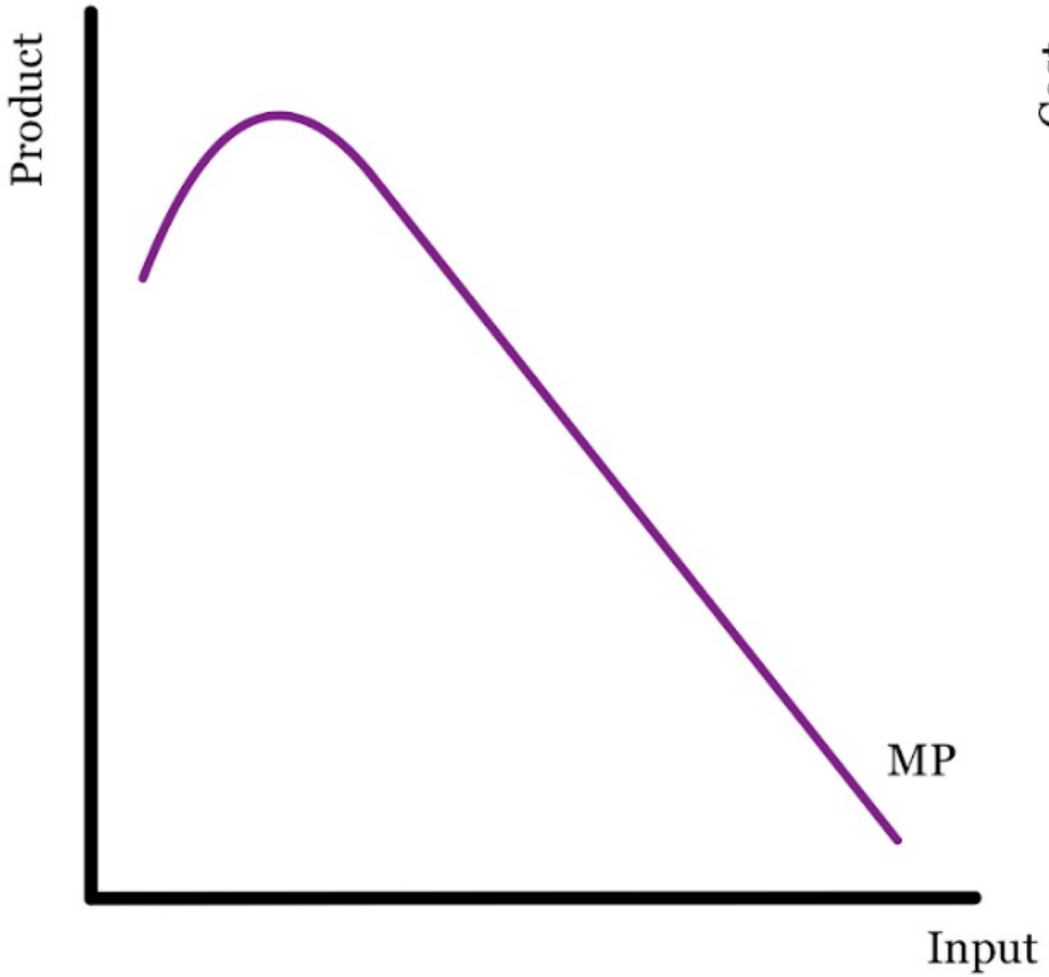
ACTIVITY

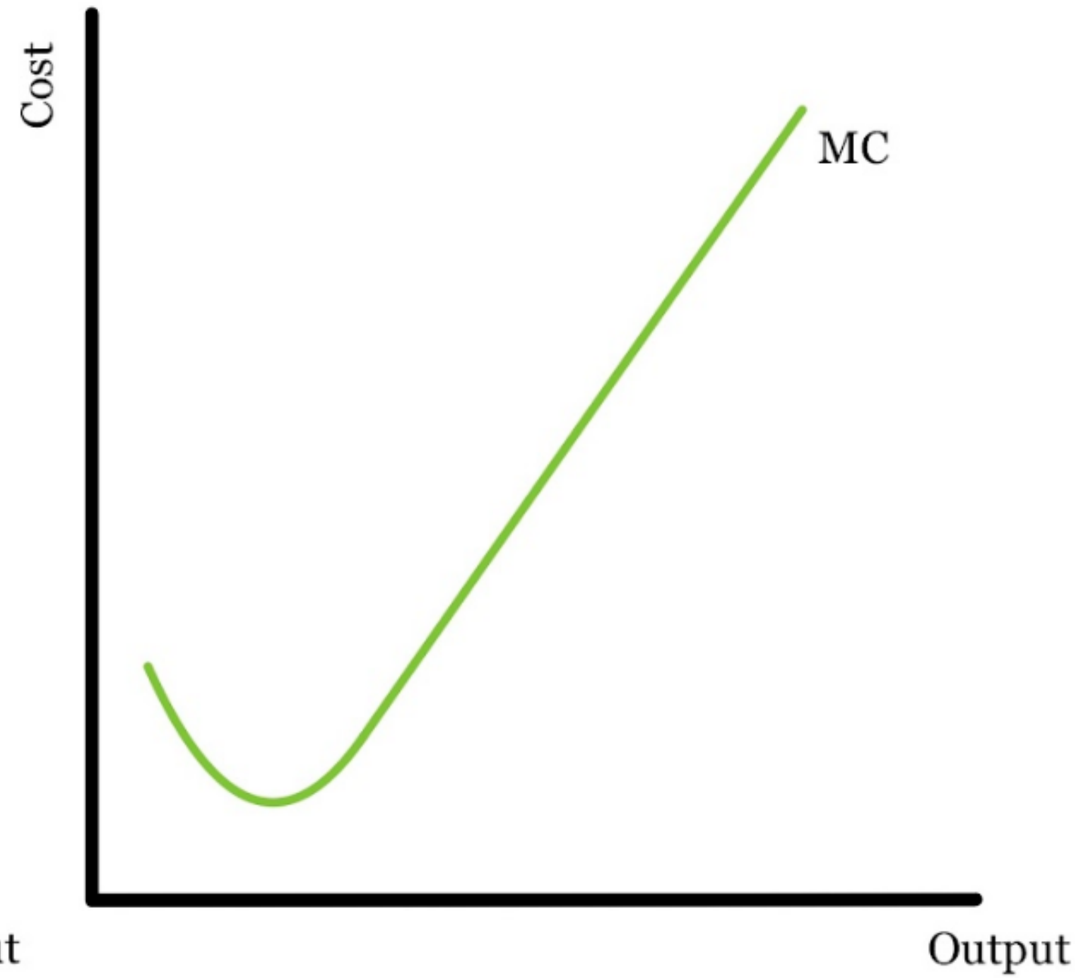
Debrief

- What trends can you see from the data collected?
- Can you explain those trends? Why do they happen?
- What would change those trends?

MP vs MC Chart

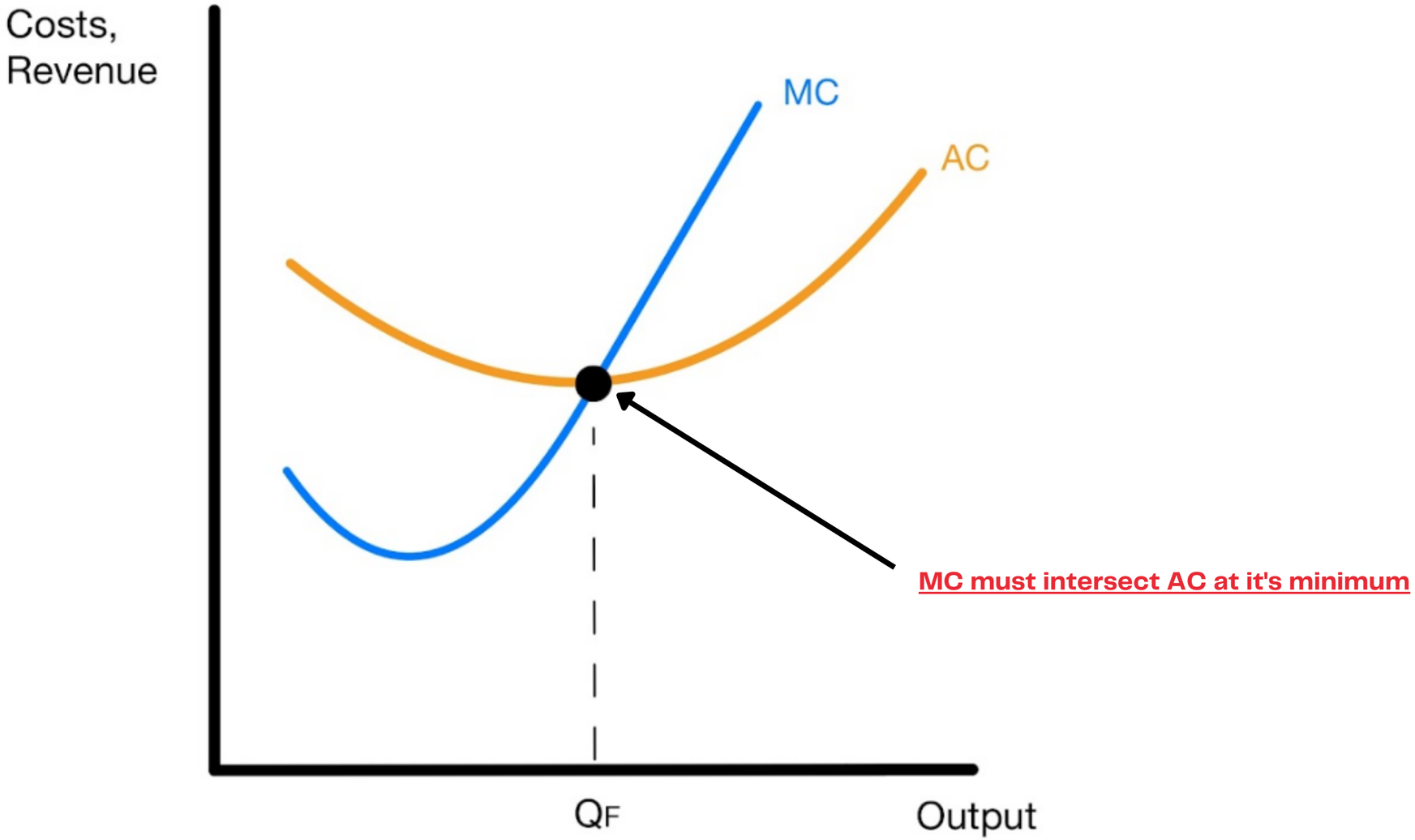
Due to the Law of Diminishing Marginal Returns, as output increases, a firm's marginal cost increases and marginal product decreases.





Standard Cost (MC and AC) Diagram

You will use MC and AC in every market structure diagram.



Profit Maximizng Rule (MR = MC)

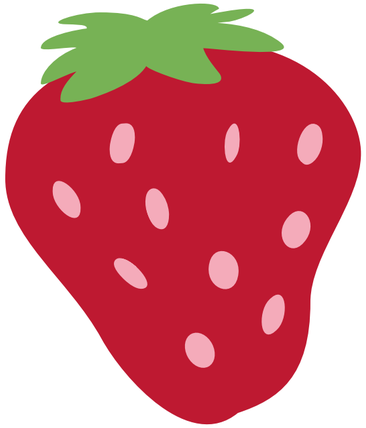
Profit Maximization

The single most important rule in Microeconomics . . .

MR = MC

The profit-maximizing rule is used by every firm in every market structure to determine the **QUANTITY** the firm should produce to maximize profits.

Perfect Competition



Perfect Competition

Perfect Competition

Characteristics

- Many small firms
- Identical/homogenous products (many perfect substitutes)
- Low barriers to entry (easy for firms to enter and exit the market)
- No market power = no control over price **(Price Takers)**

Example: Most agricultural products (strawberries, corn, potatoes)

Efficiency

Efficiency

Allocative Efficiency

Each market structure is evaluated on its allocation efficiency.

Achieved when just the right amount of goods and services are produced from society's point of view so that scarce resources are allocated in the best possible way.

It is achieved when, for the last unit produced, **price (P) is equal to marginal cost (MC).**

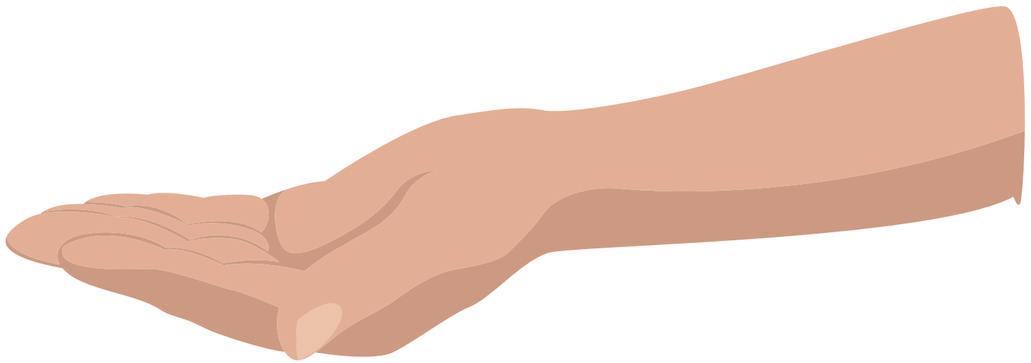
Market Power

Market Power

Market Power is a measure of how much control a firm has over it's price.

Due to the characteristics, firms in perfectly competitive markets have **NO MARKET POWER** meaning they have no control over price.

They are called "**Price Takers**" as they must take whatever price is set by the market.



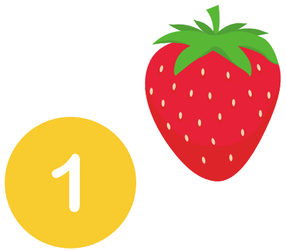
Price Takers

Why are all firms in perfect competition price takers?

Because of perfect substitutes, identical products, and large numbers of firms, if one firm tries to charge a higher price no one will purchase their goods.

This results in a perfectly elastic demand curve for firms in Perfect Competition.

Example: Which strawberry would you purchase?

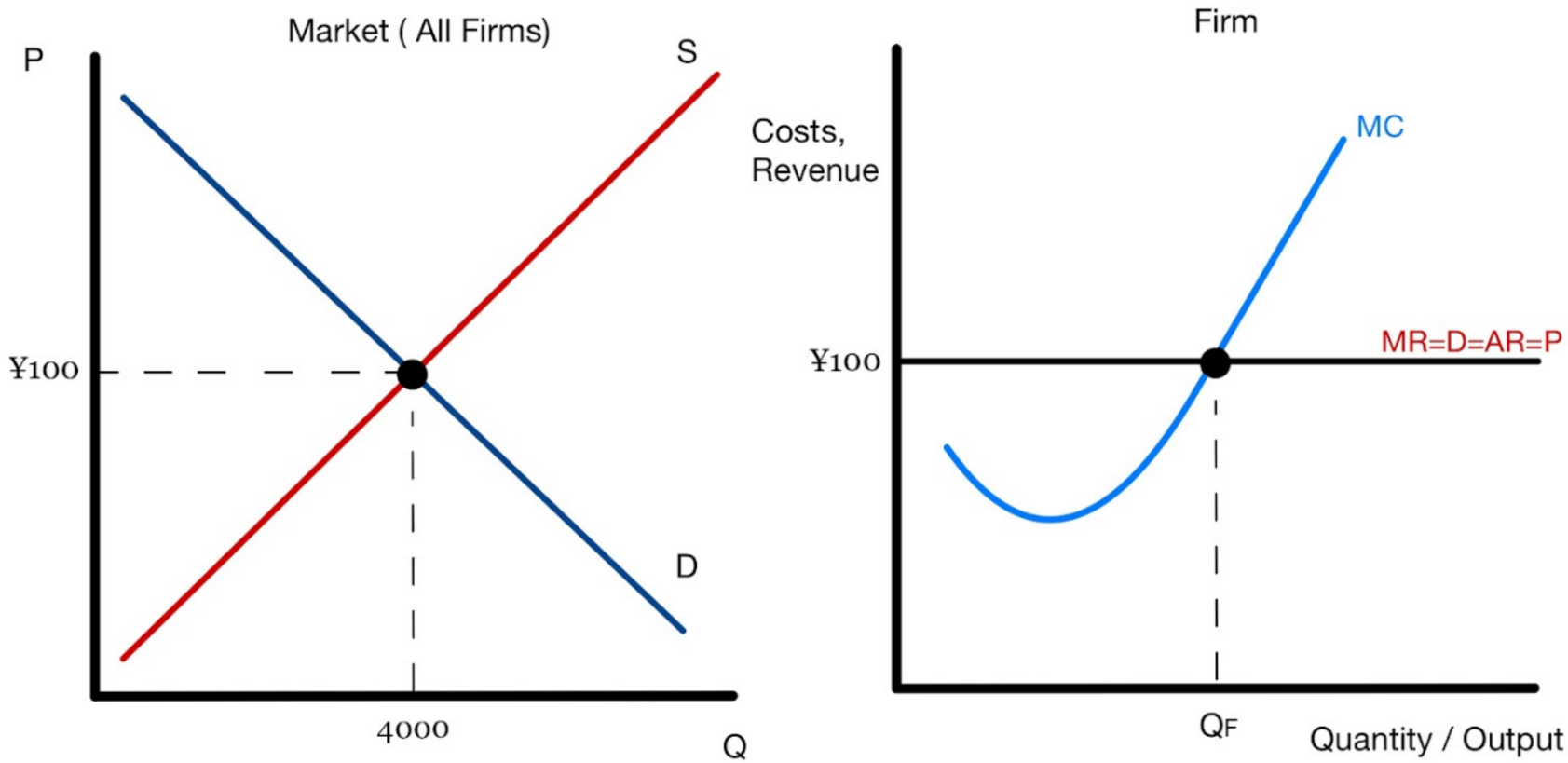


A rational consumer would purchase either of the 1 coin strawberries rather than the 2 coin strawberries because they are identical products!

Perfect Competition Diagram

There are two diagrams put together side-by-side when drawing a firm that participates in Perfect Competition.

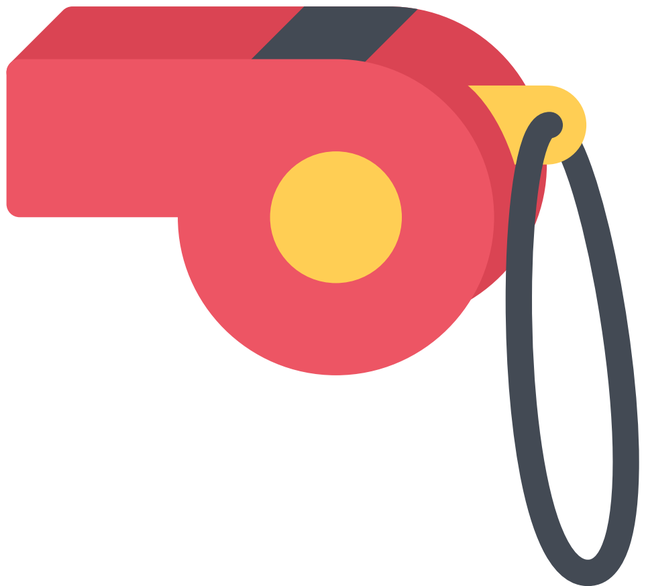
Additionally, because no firm has control over the price, the MR is also equal to the Price. Firms must take the price from the market – **Price Takers**. **(MR=D=AR=P)**



Practice

For each diagram:

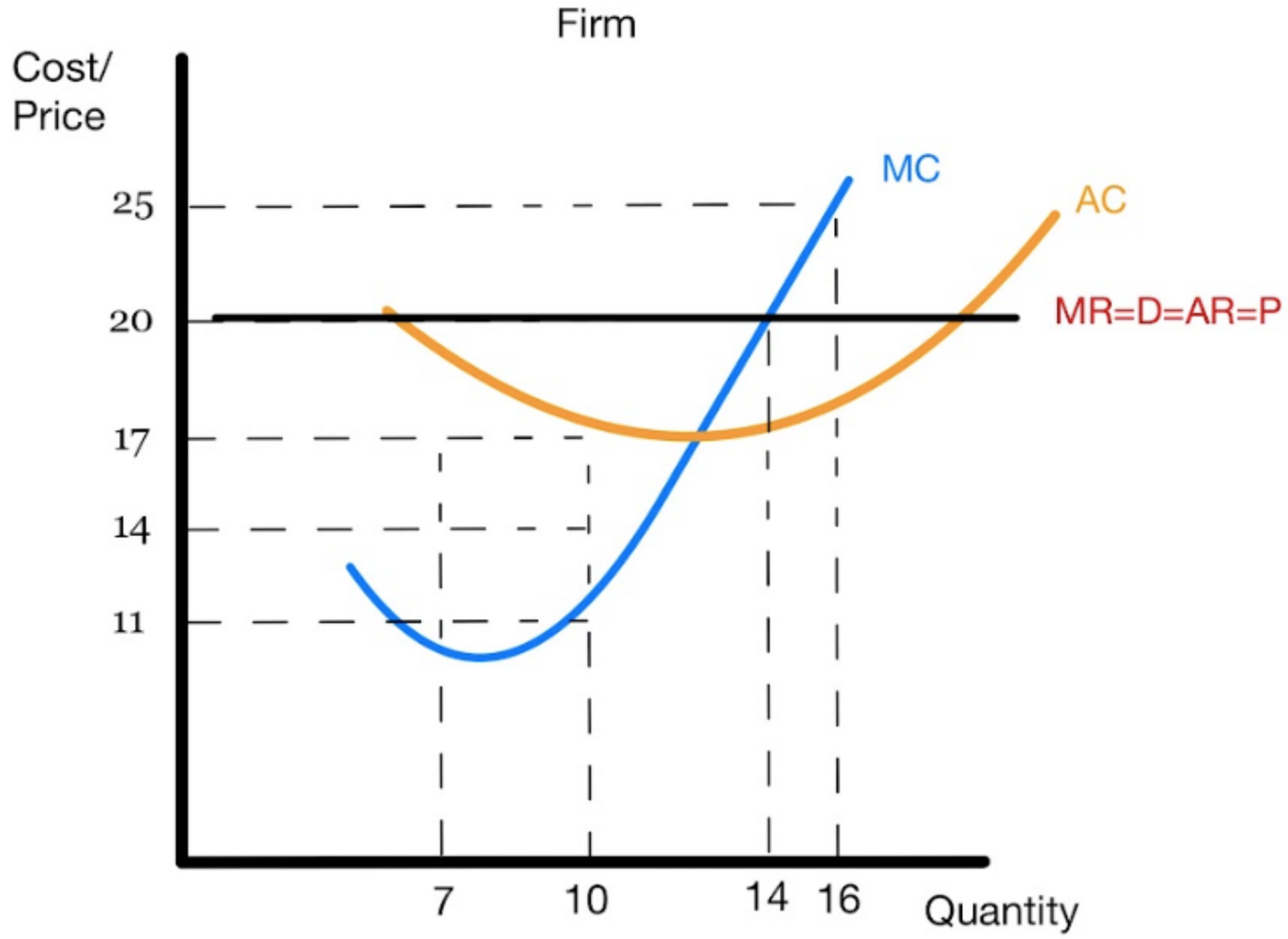
1. Determine the quantity that should be produced
2. Determine the Total Revenue
3. Determine the Total Cost
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit.



Practice #1

For each diagram:

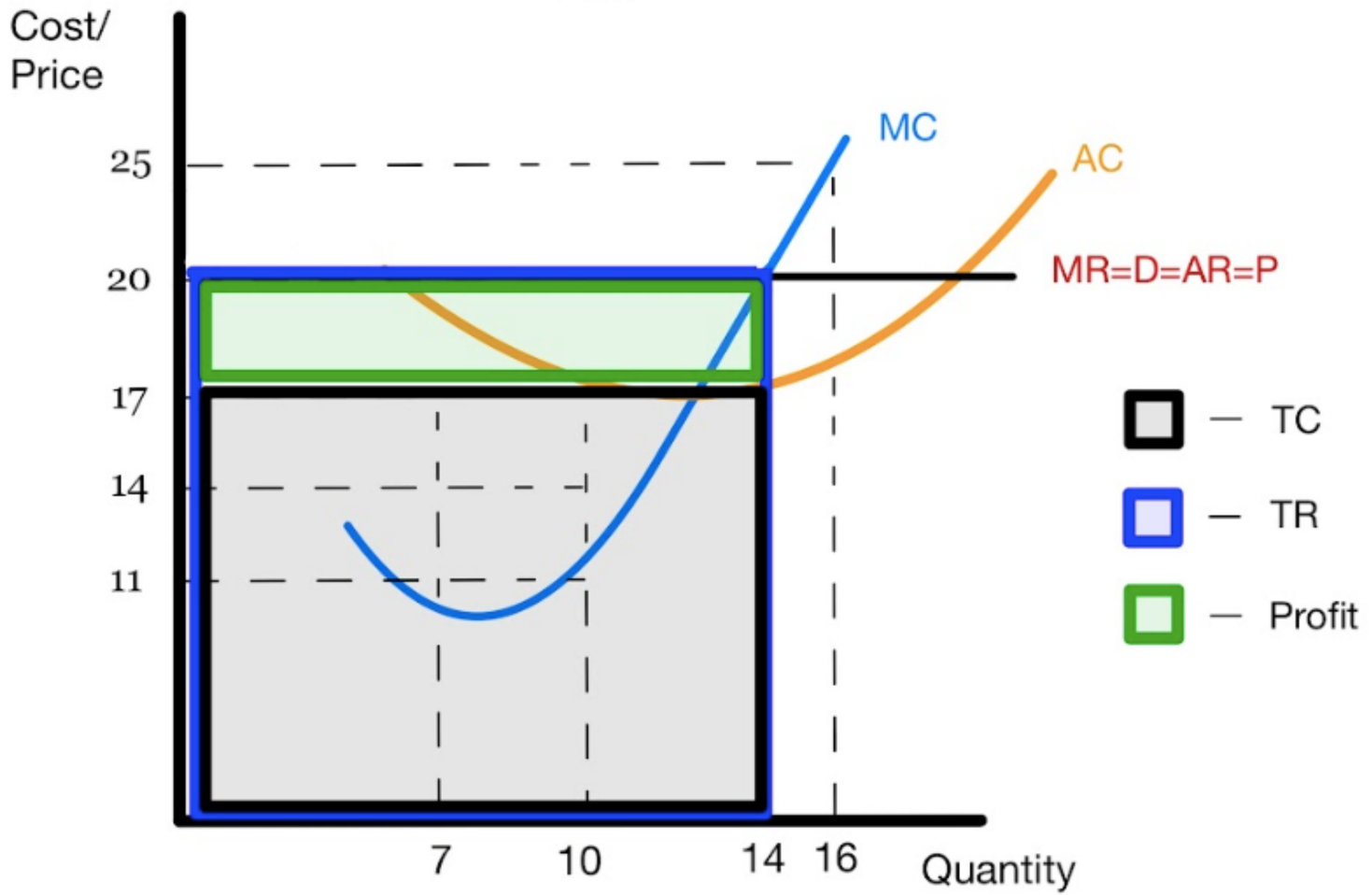
1. Determine the quantity that should be produced
2. Determine the Total Revenue
3. Determine the Total Cost
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. How Much?



Practice #1

For each diagram:

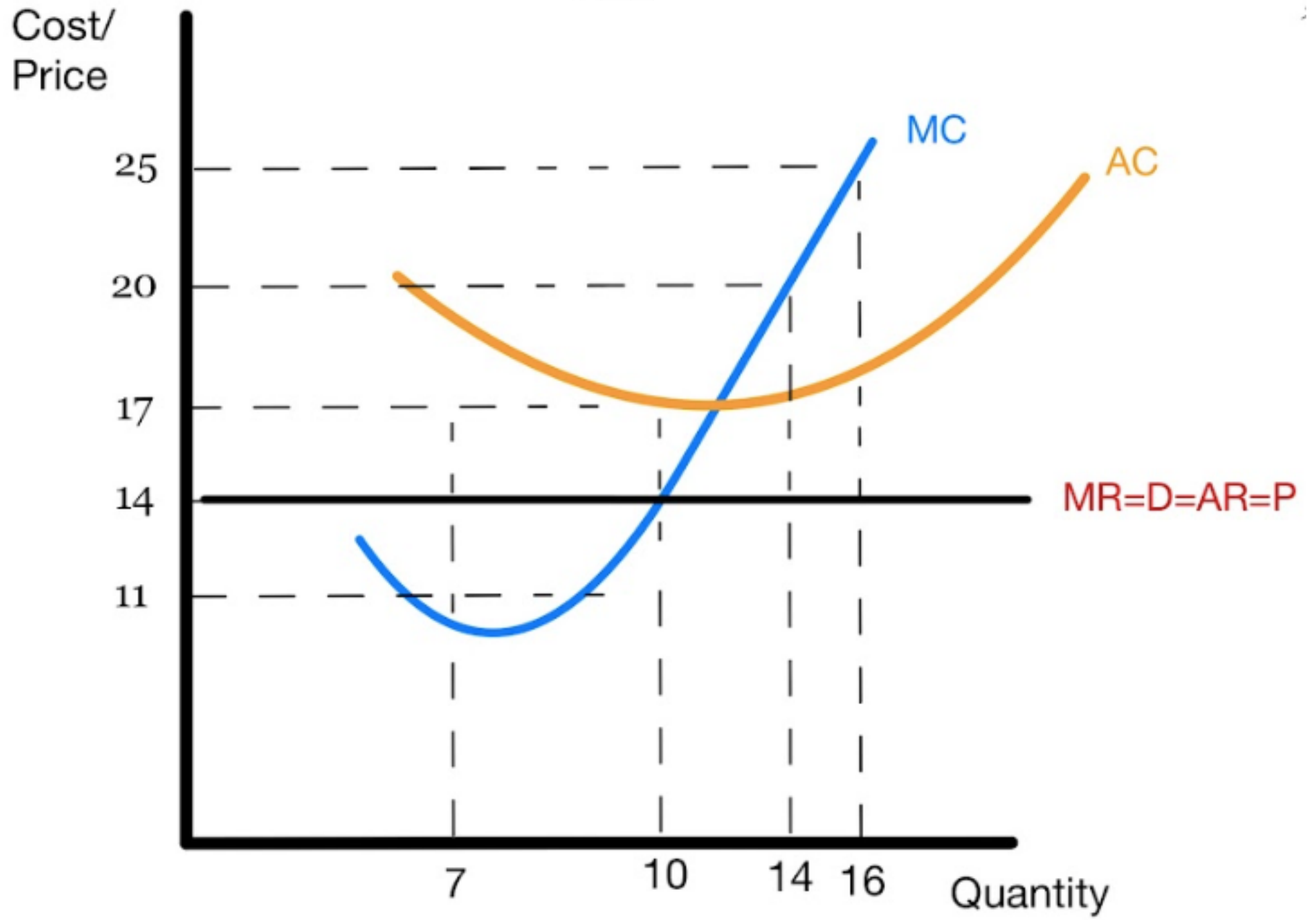
1. Determine the quantity that should be produced **14**
2. Determine the Total Revenue **280**
3. Determine the Total Cost **238**
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. **Abnormal Profit; 42**



Practice #2

For each diagram:

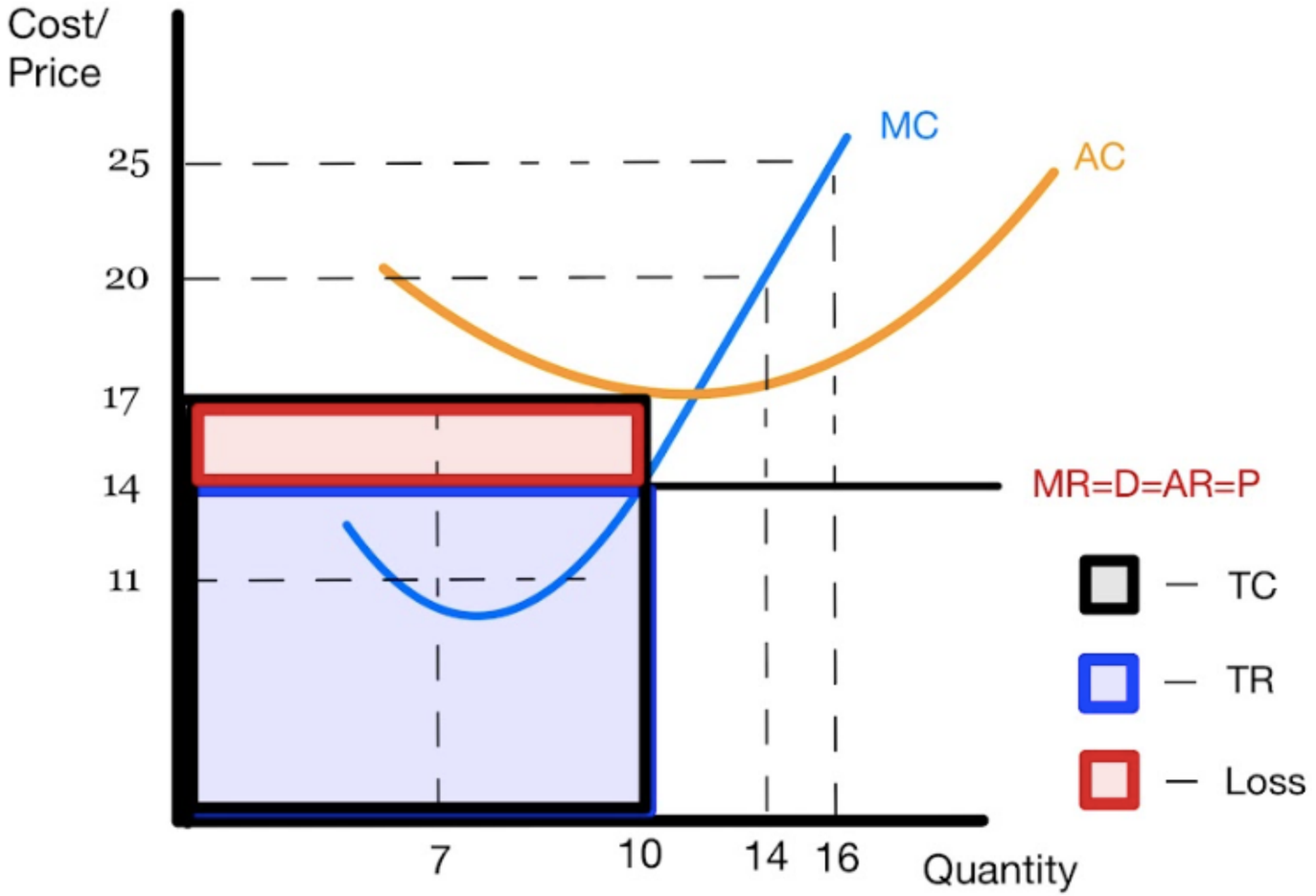
1. Determine the quantity that should be produced
2. Determine the Total Revenue
3. Determine the Total Cost
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. How much?



Practice #2

For each diagram:

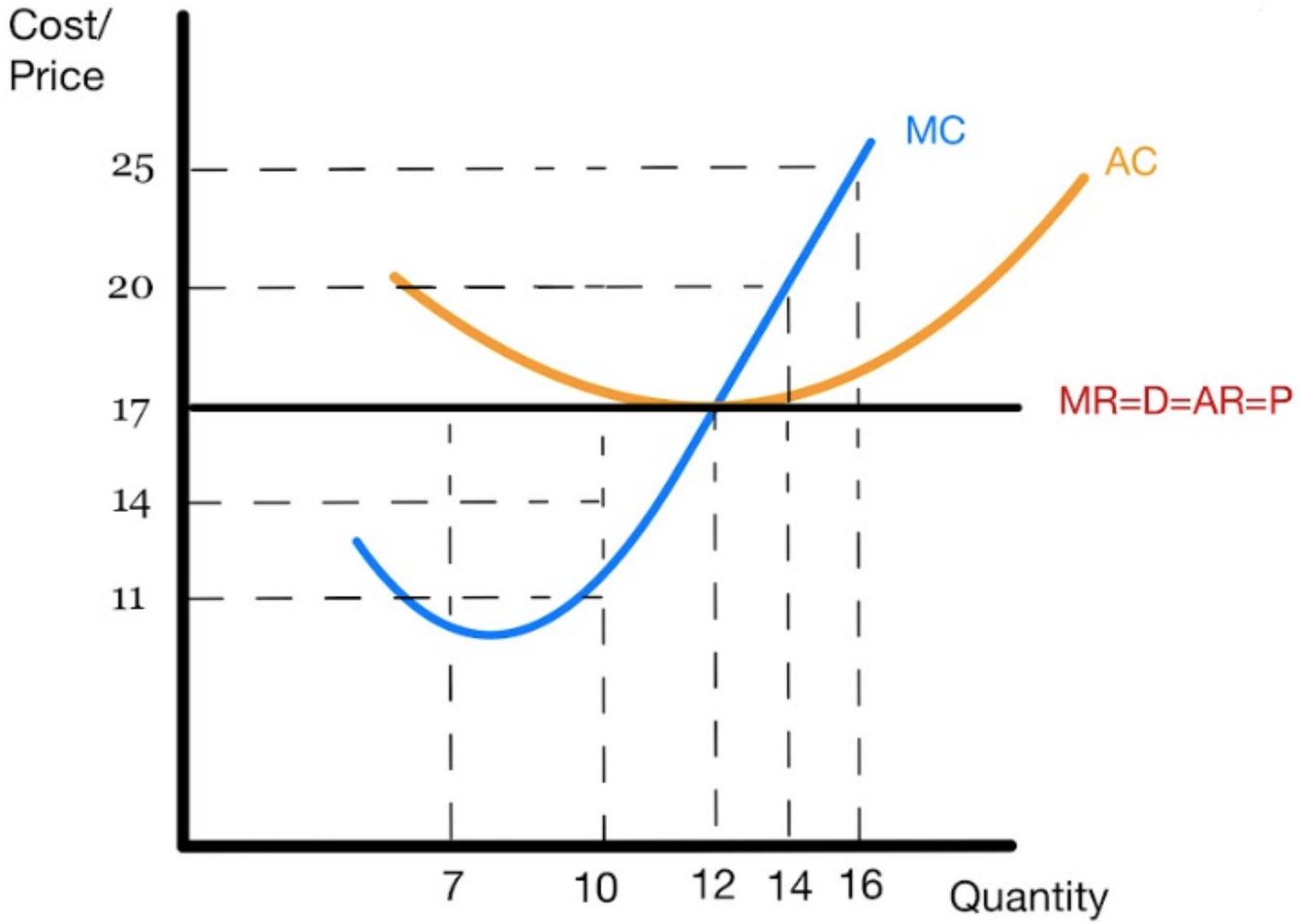
1. Determine the quantity that should be produced **10**
2. Determine the Total Revenue **140**
3. Determine the Total Cost **170**
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. **Loss; 30**



Practice #3

For each diagram:

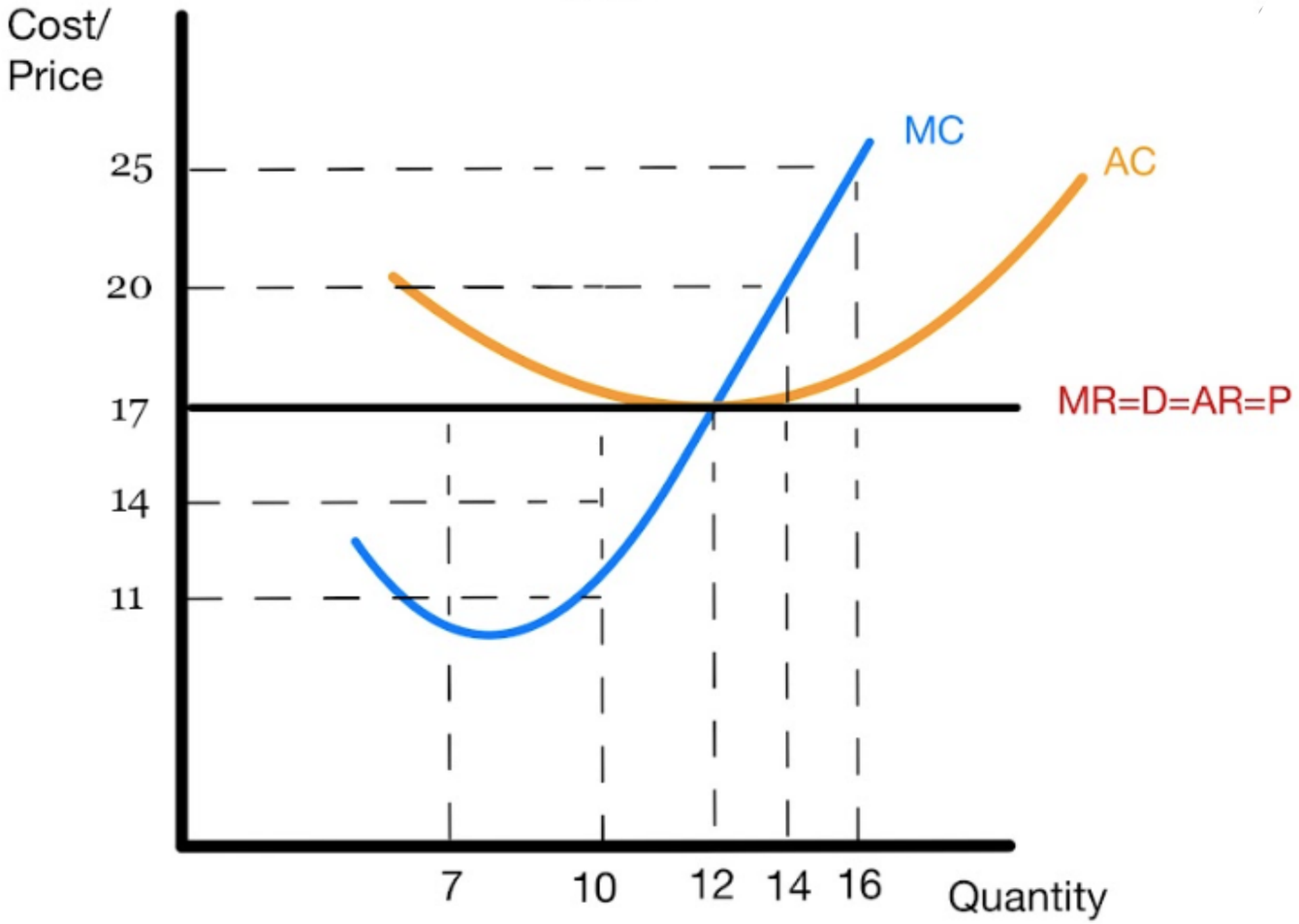
1. Determine the quantity that should be produced
2. Determine the Total Revenue
3. Determine the Total Cost
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. How much?



Practice #3

For each diagram:

1. Determine the quantity that should be produced **12**
2. Determine the Total Revenue **204**
3. Determine the Total Cost **204**
4. Determine whether the firm is making an abnormal profit, a loss, or normal profit. **Normal Profit**



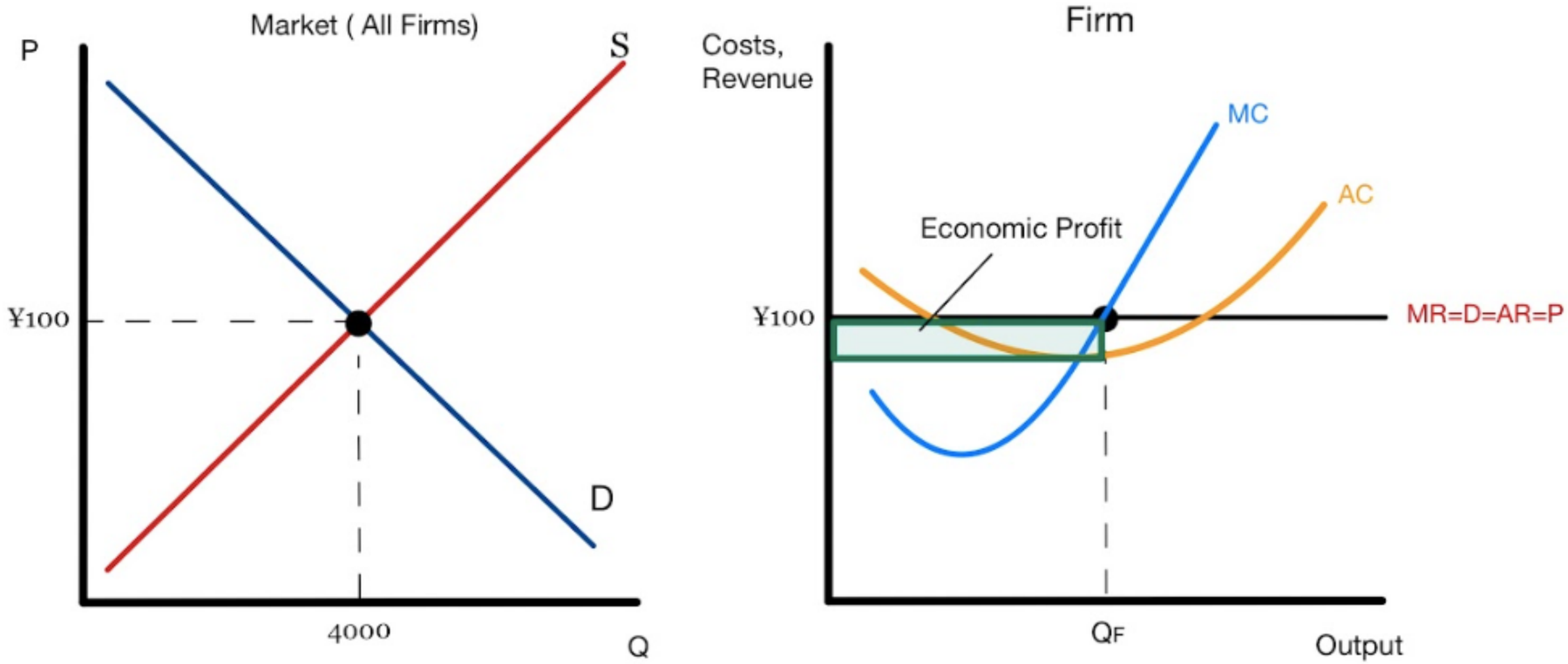
Short-Run vs Long-Run

Short-Run Profits/Loss

Due to low barriers, firms are able to join, or leave, Perfect Competition with ease.

When firms make abnormal profits or losses in the short-run, other firms react by either leaving or entering the market.

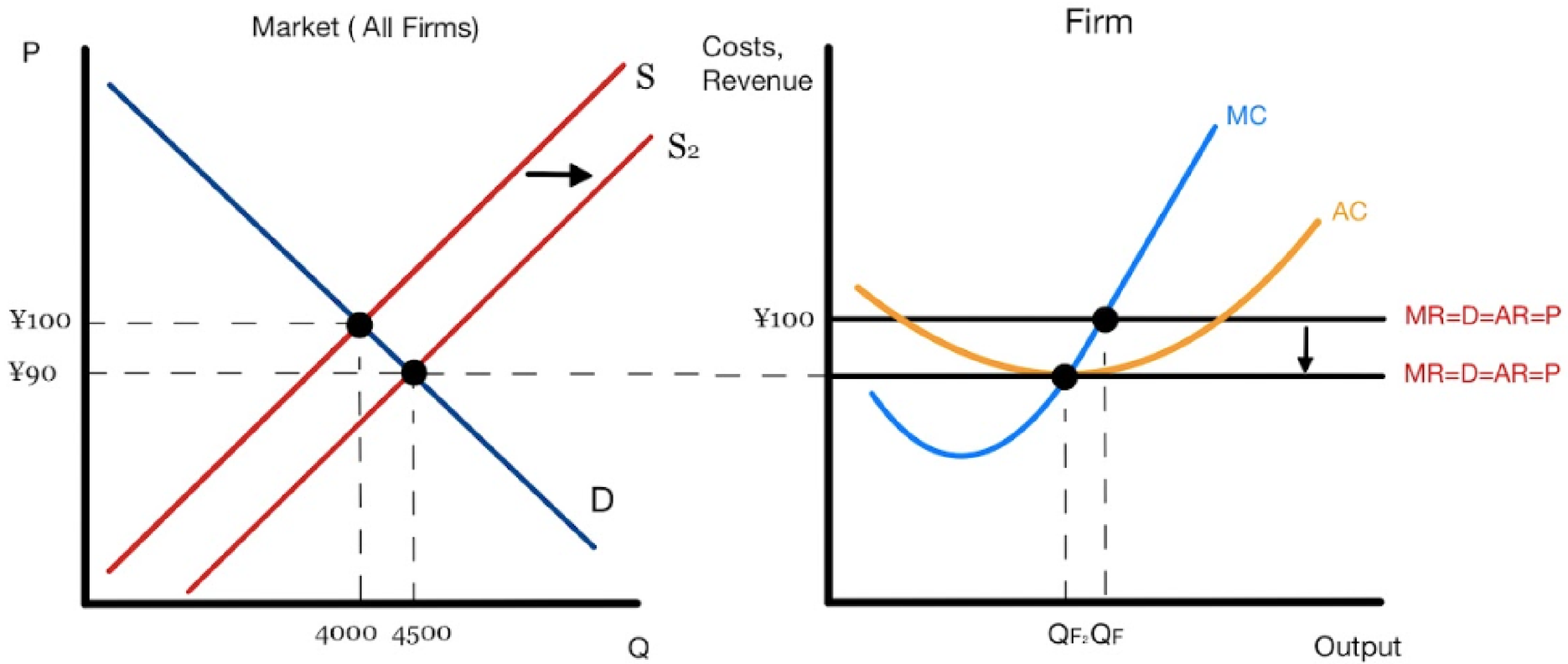
If a firm is making abnormal economic profits, how do firms react?



Adjustment to Long-Run

Abnormal profits attract new firms to join! As the numbers of firms increase, the market supply increases as number of firms is a shifter.

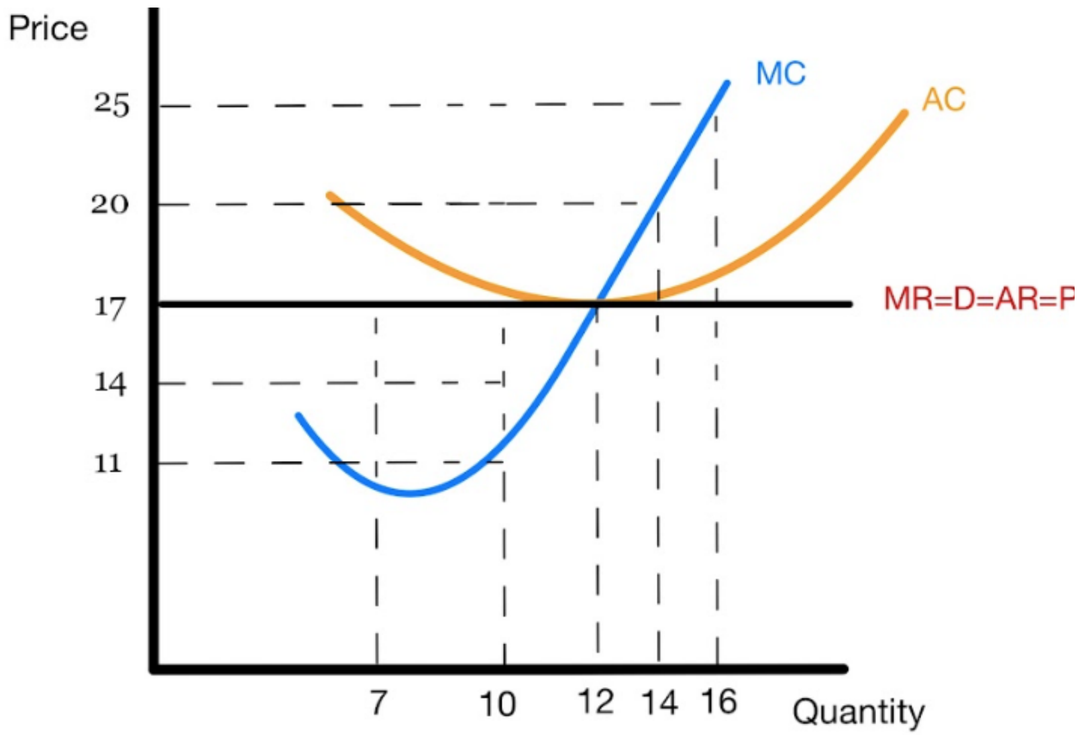
As firms join, the equilibrium price in the market decreases, and quantity increases. As firms are Price Takers, they adjust to the new price until eventually, everyone in the market makes normal economic profit.



Long-Run

In Perfect Competition:

- **Firms can only make abnormal profits or losses in the SHORT-RUN**
- **ALL firms will make Normal Profit in the long run.**

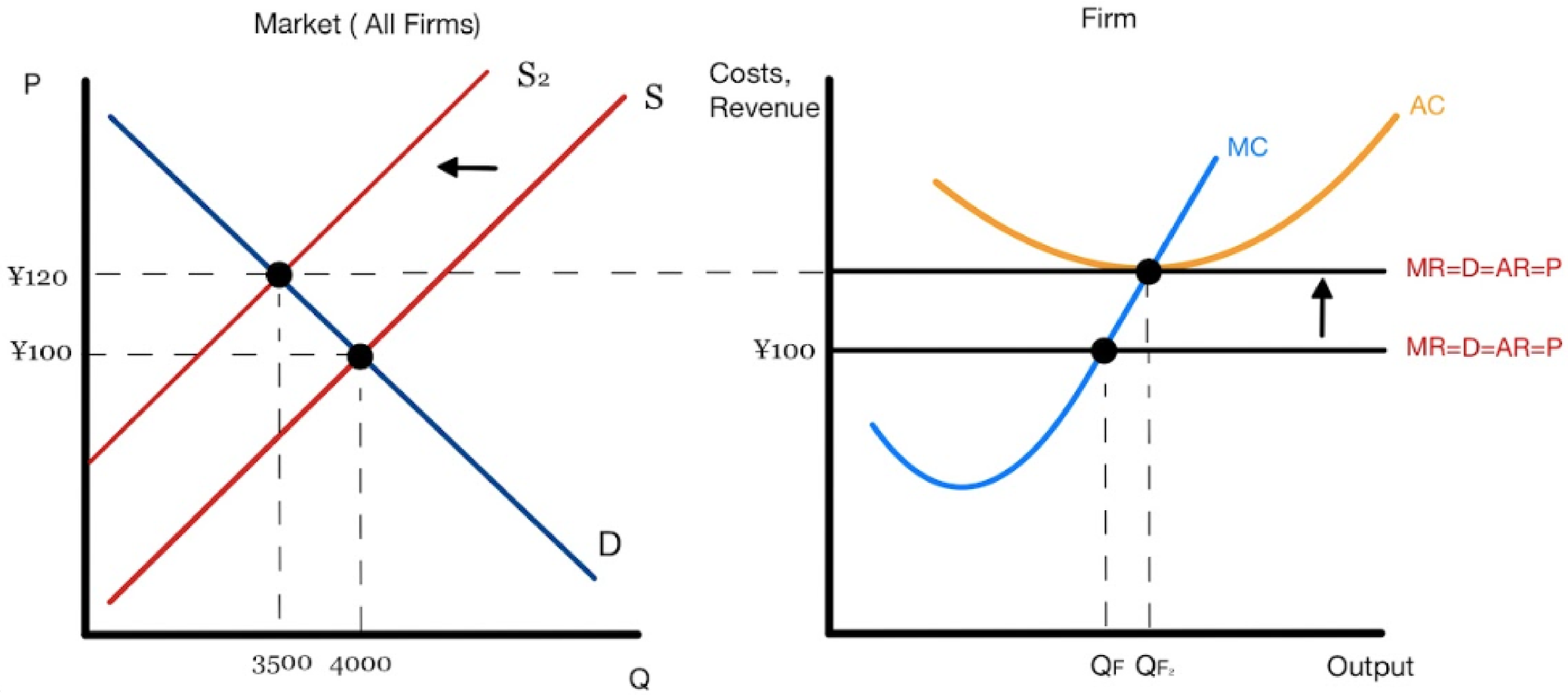


Try It Out

Draw a Perfectly Competitive Firm making a loss.
Then, draw how that firm will adjust in the Long-Run.

Try It Out

As firms earn losses, some will leave the market. Resulting in an increase in Price and normal profit.



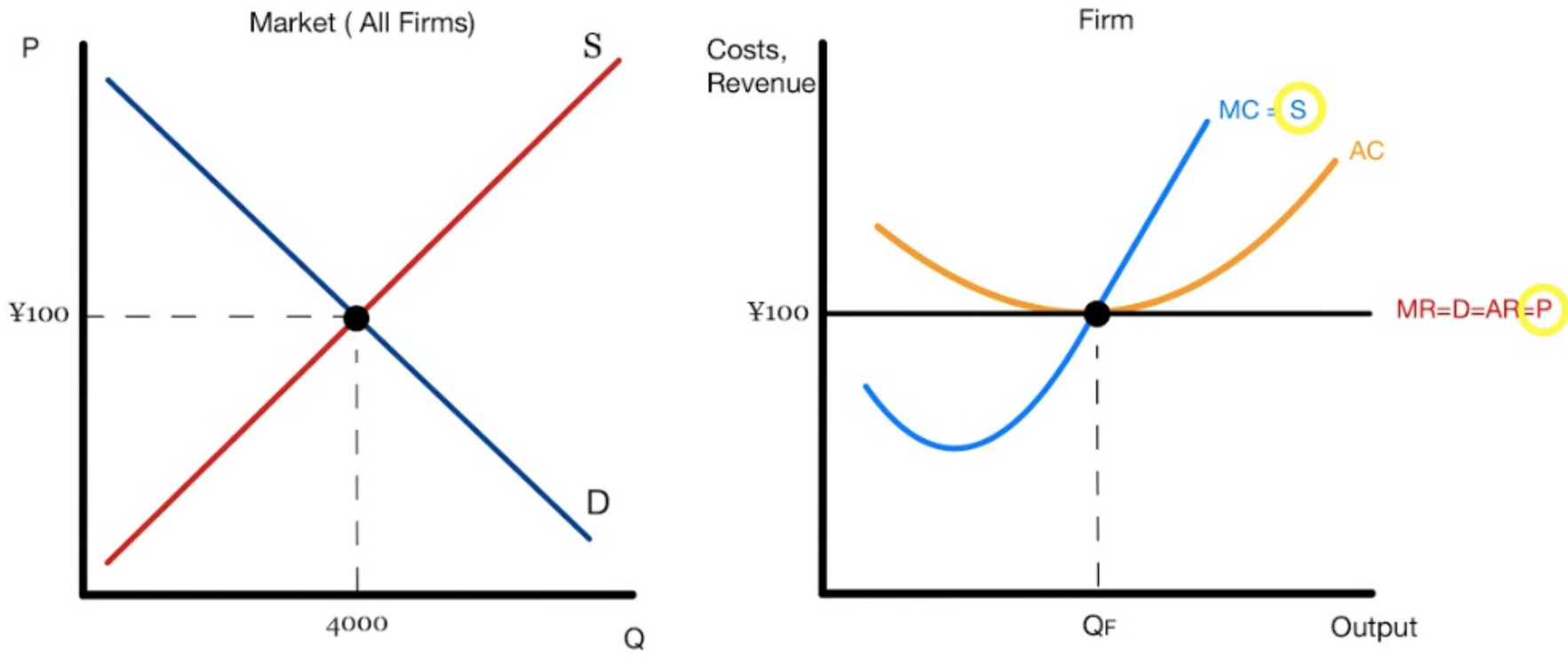
Evaluation of Perfect Competition

Efficiency

Perfect Competitive firms are perfectly efficient.

Firms with high costs are forced to exit the industry. Abnormal profit signals firms to join the market.

Profit Maximizing Perfectly Competitive firms are always **Allocatively Efficient (P = MC)**



Evaluation of Perfect Competition

Advantages of Perfect Competition

- Allocatively Efficient (P=MC)
- Offers the lowest price possible for consumers
- High competition ensures inefficient producers exit the market
- The market is very responsive to consumers taste/demand

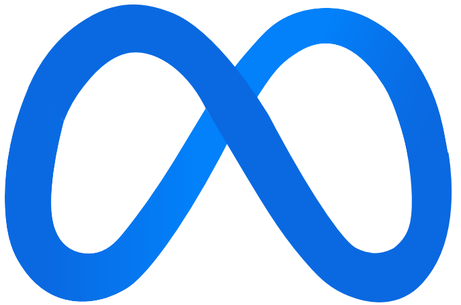
Evaluation of Perfect Competition

Disadvantages of Perfect Competition

- Unrealistic
  - There will always be imperfect information and products aren't truly identical
- No economies of scale
- Lack of product variety
- Unable to engage in R&D to improve efficiency

Monopoly

Monopoly



Characteristics

- Single/One dominant firm
- Unique product (No close substitutes)
- Extremely high barriers to entry (difficult for firms to enter and exit the market)
- Dominant market power = no control over price **(Price Maker)**

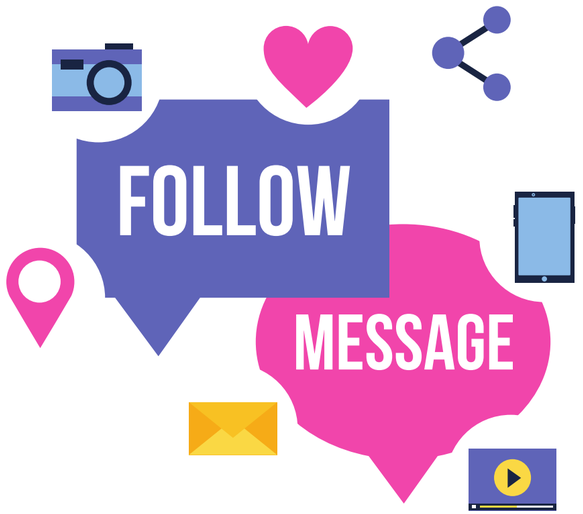
Example: NBA, Meta, Google, Local Electricity and Water Providers

Market Share

In reality, a Monopoly is measured by market share dominance rather than the number of firms .

Examples of firms with dominant market share:

- **Google - 93%**
- **Nike Basketball Shoes - 80%**
- **Facebook - 65%**



Natural Monopoly

A monopoly that can produce enough output to cover the entire needs of a market while still experiencing economies of scale. Its average costs will therefore be lower than those of two or more firms in the market

At times, a natural monopoly is preferred. When economies of scale make it impractical for multiple firms to participate, a natural monopoly is preferable.

Example:

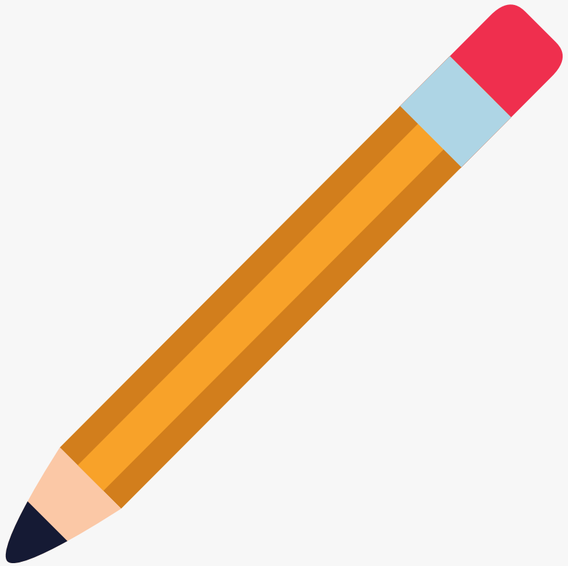
A city's water utility service requires very large start-up costs and economies of scale. Therefore, if multiple firms joined, they would all pay similar start-up costs and develop economies of scale while also competing for customers and not receiving 100% of the market's revenue. As a result, some firms would not be profitable or the quality of the product (water) would become lower.

This example illustrates why natural monopolies are sometimes preferable. Typically natural monopolies are managed by the government and occur with utilities or public goods.

Sources of Market Power

- **Economies of Scale**
  - Typically firms start small with limited expertise. Monopolists have the ability to charge a lower price than newcomers.
- **Natural Monopoly**
  - Only enough revenue and economies of scale to support one firm
- **Legal Barriers**
  - Patents, Copyright, Licenses, etc.
- **Branding**
  - Customers may be loyal to a certain firm due to marketing. Kleenex, Band-Aid, etc.
- **Anti-Competitive Behavior**
  - A monopolist can charge lower costs due to economies of scale. Therefore, they can lower their price to suffocate upcoming competitors.

Graphing Monopolies

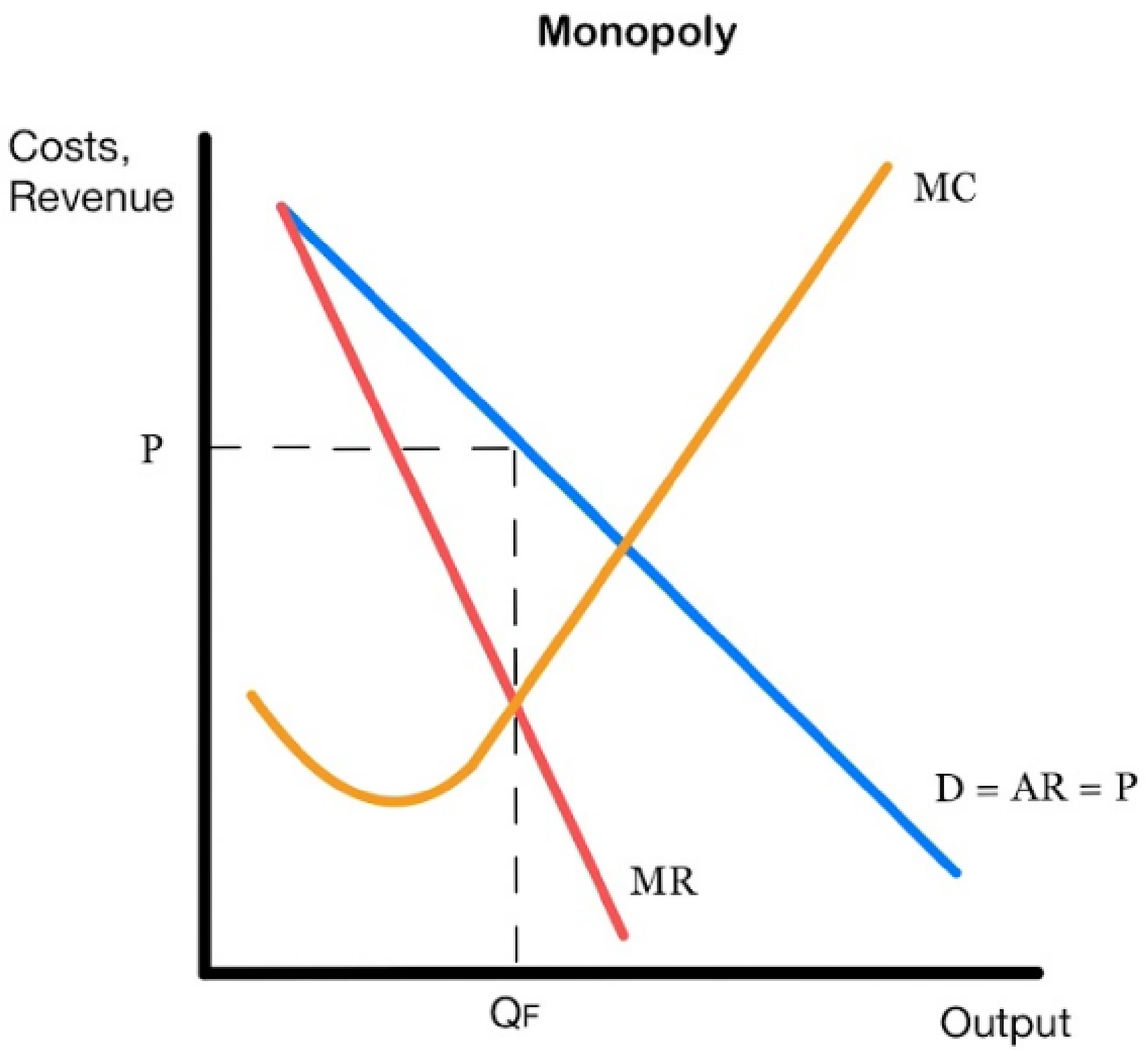


Graphing A Monopoly

Key Components:

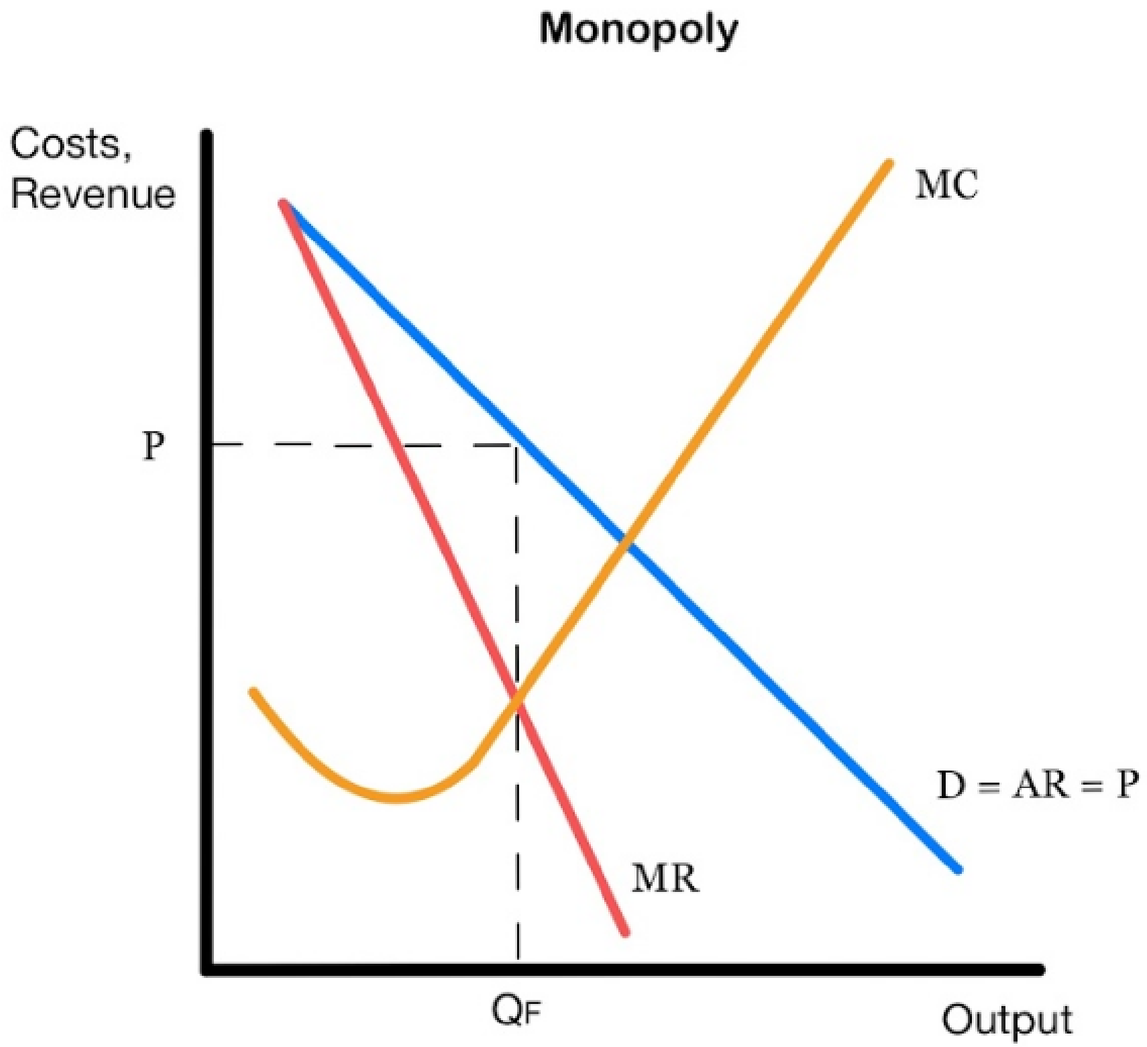
1. **Only one diagram. The singular firm IS the market.**
2. **The cost curves are exactly the same (AC, MC)**
3. **The profit Maximizing rule still worked to find the quantity. (MR=MC)**

Monopoly Diagram



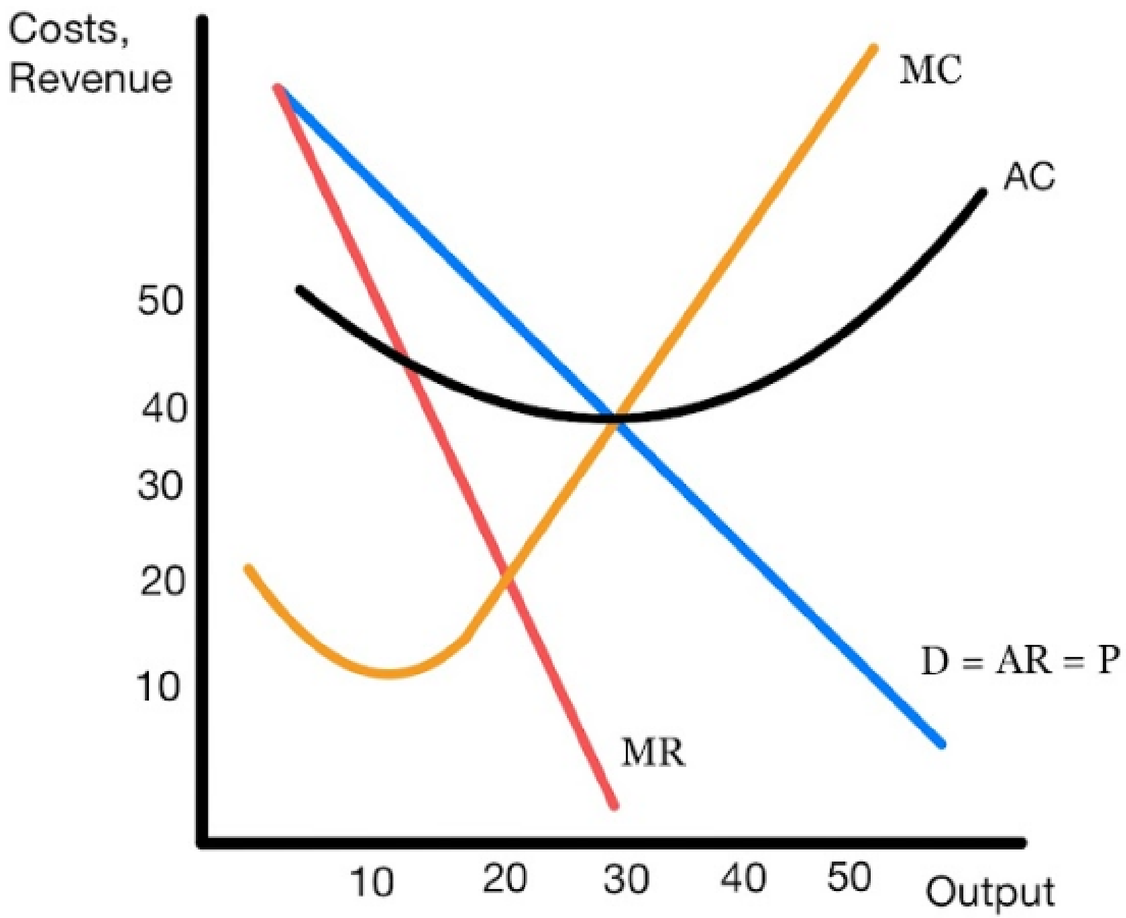
No AC curve on this diagram

Monopoly Diagram



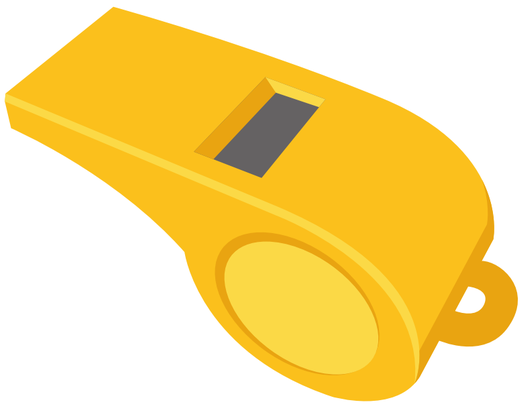
The key difference between a monopoly diagram and perfect competition is that monopolies are able to set their price. So they do not set their price where MR = MC, just the quantity. The price monopolies sell at is the one which consumers are willing to pay (D).

Practice

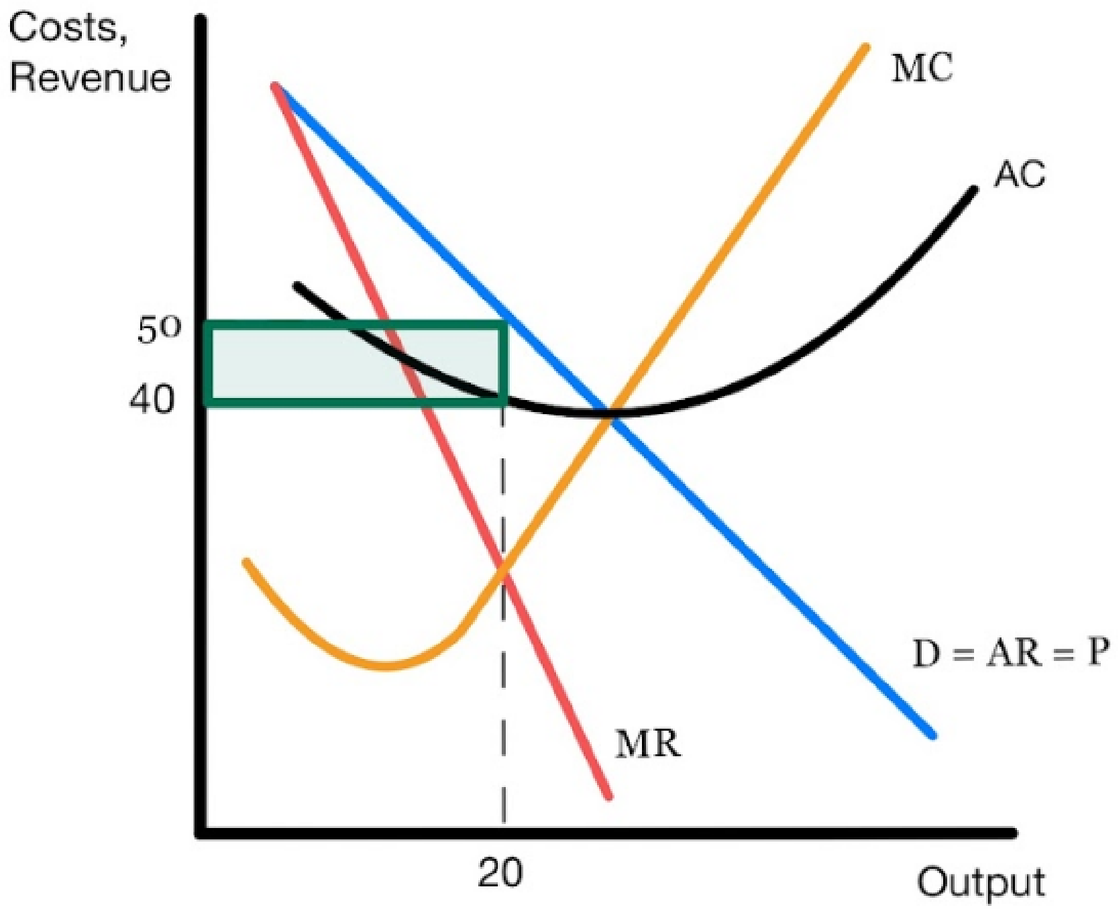


Analyze the diagram and determine:

- Quantity produced
- Price Sold
- Total Revenue
- Total Costs
- Normal Profit, Abnormal Profit, or Loss
- Allocatively Efficient Quantity



Practice

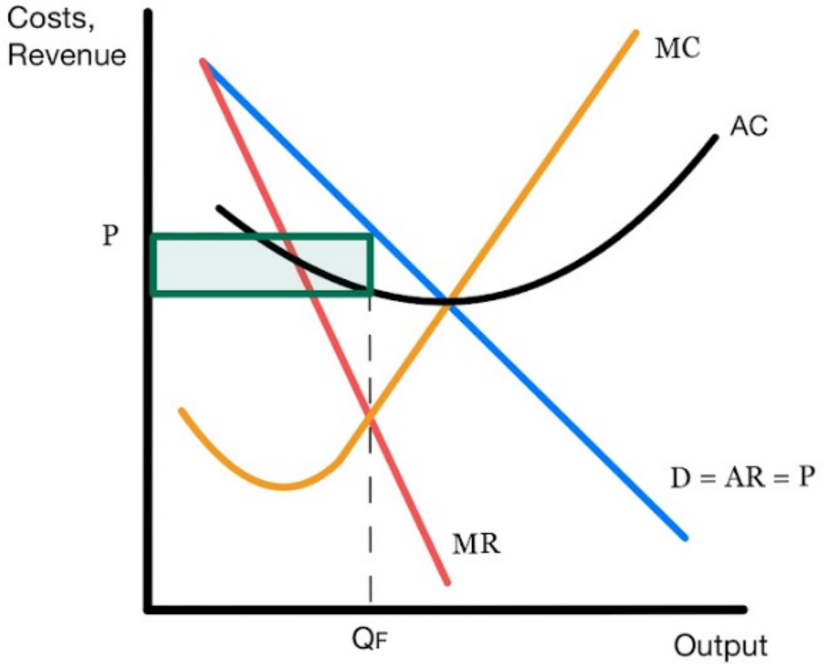


Analyze the diagram and determine:

- Quantity produced **20**
- Price Sold **50**
- Total Revenue **100**
- Total Costs **80**
- Normal Profit, Abnormal Profit, or Loss **Abnormal Profit (20)**
- Allocatively Efficient Quantity **30 (P = MC)**

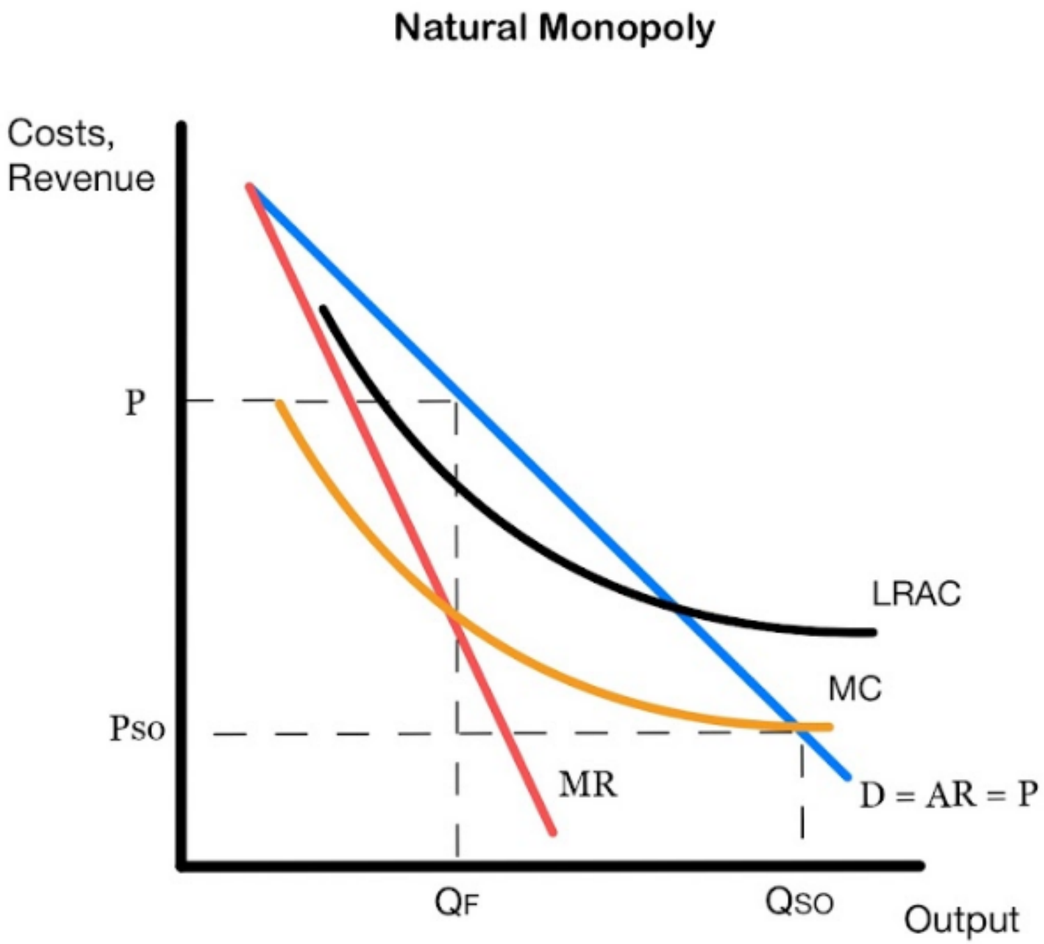
Monopoly Making Profit

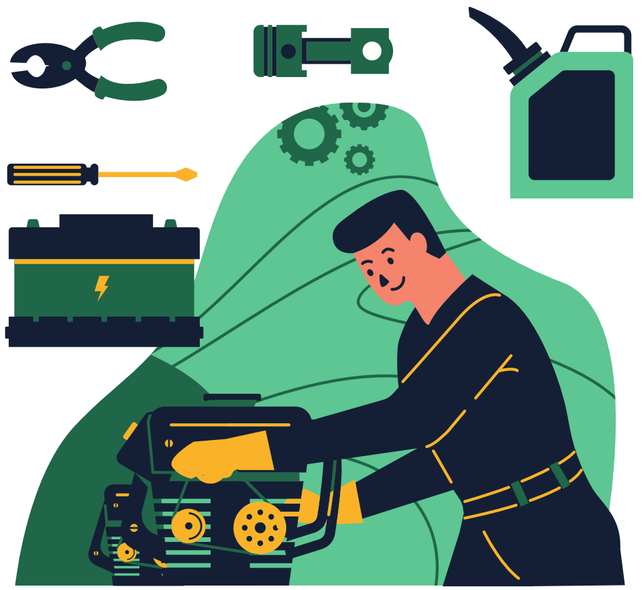
Unlike perfect competition, Monopolies are able to make abnormal profits in the short and long-run.



Natural Monopoly Diagram

Natural Monopolies MUST use economies of scale,
therefore their AC and MC curves look different.





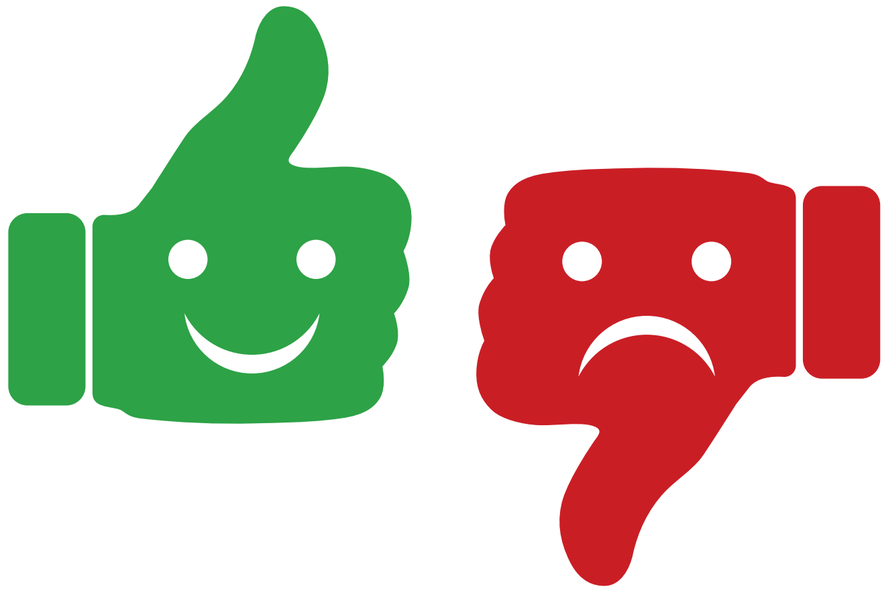
Evaluation of Monopolies

Evaluation of Monopoly

Are Monopolies allocatively efficient?

No! Monopolies are not allocatively efficient because they

- Don't produce where P = MC (Not Allocatively Efficient)
- Charge a higher price than they should
- Purposely don't produce enough in order to charge a higher price



Evaluation of Monopoly

Disadvantages of Monopolies

- Consumers pay a higher price and have a lower quantity available compared to perfect competition.
- Loss of consumer surplus
- Less Innovation as there is little incentive
- Market Failure, Allocative Inefficiency
- Lower quality of goods or services as no suitable alternatives are available

Evaluation of Monopoly

Advantages of Monopolies

- Economies of scale can allow for lower production costs and lower price
- Natural Monopolies – typically ensures basic utilities at affordable prices for communities
- Research & Development (Abnormal profits allow for funding to research)

Monopolistic Competition

Monopolistic Competition

Characteristics

- Many firms
- Differentiated products (Same-Same but different)
- Low barriers to entry (easy for firms to enter and exit the market)
- Limited market power
- Rely heavily on branding and advertising

Example: McDonald's, Starbucks, Etsy, Coca Cola, Adidas, Local restaurants

If Perfect Competition and Monopoly Had A Baby . . .

Monopolistic Competition!

Traits of Monopolistic Competition

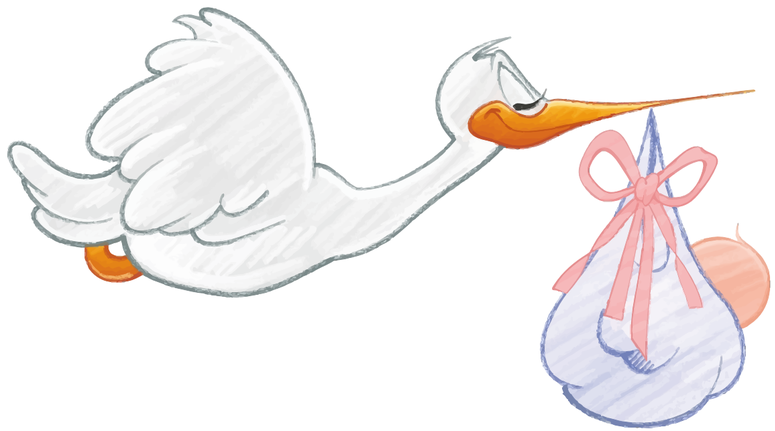
Monopolistic Competition!

Monopoly

- Some control over price
- Similar looking graph (D > MR)
- Not Allocatively Efficient

Perfect Competition

- A large number of smaller firms
- Low Barriers to Entry
- In the Long-Run, Normal Profit.



Differentiated Products

Products are similar but slightly different




All shoes! But slightly different

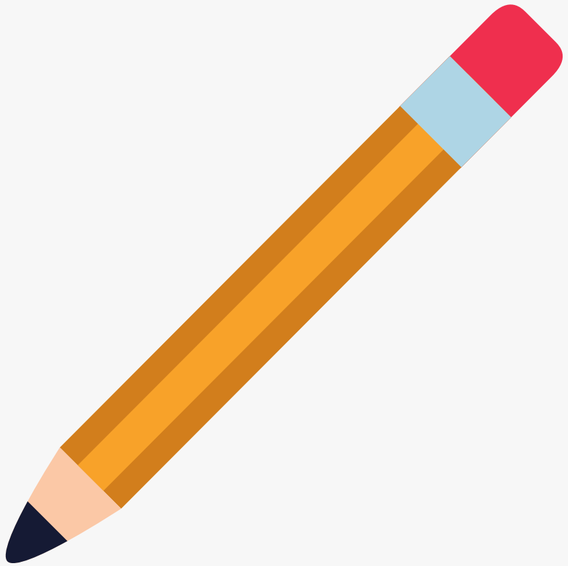
Advertising and Branding

Because products are so similar, firms must attempt to differentiate their products as much as possible with marketing. Obtaining loyal customers leads to higher market power and the ability to raise price.

Examples of Marketing Strategies

- **Packaging and Brand Name**
- **Service Quality**
- **Location**
- **Commercials**

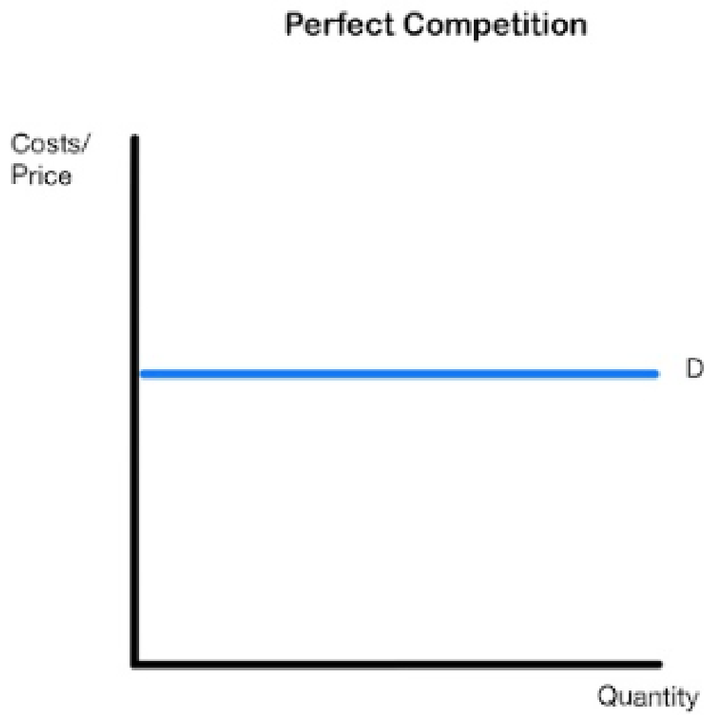
Graphing Monopolistic Competition

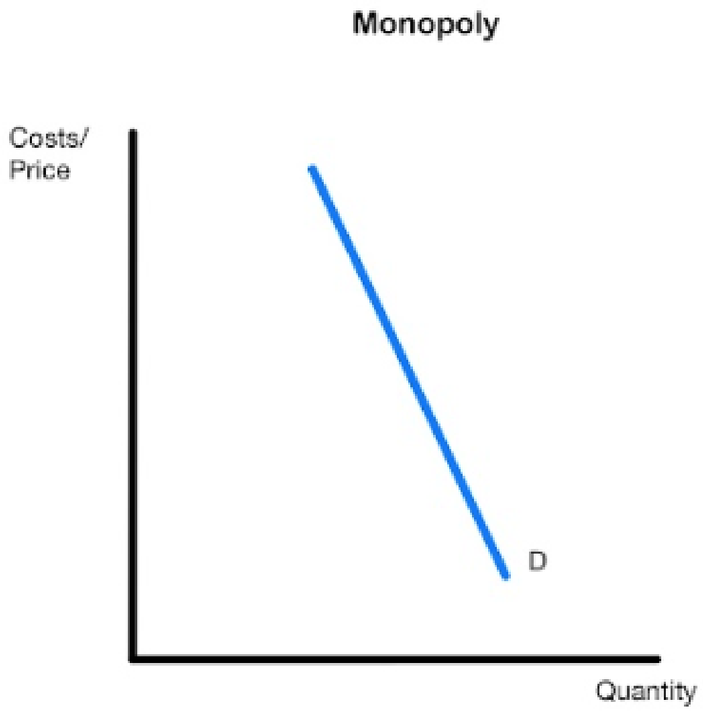


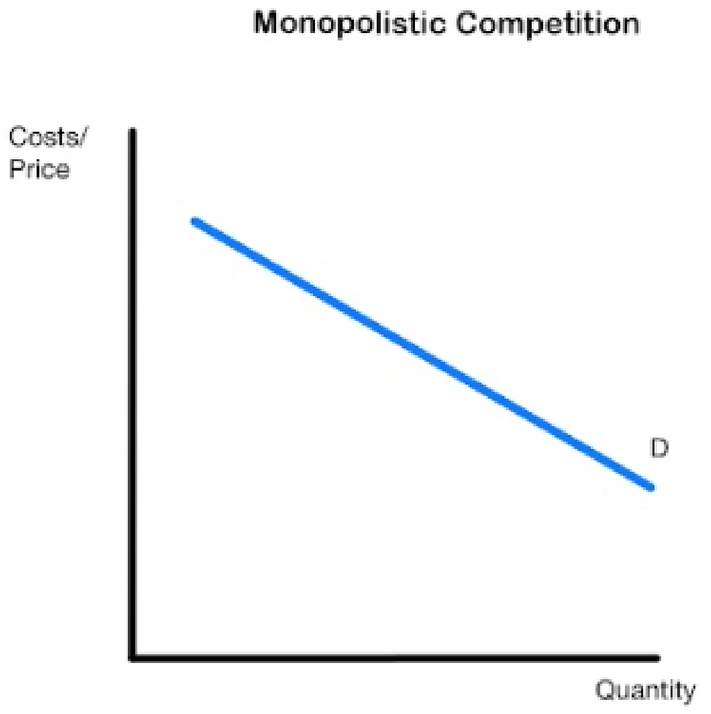
Graphing Monopolistic Competition

Key Components:

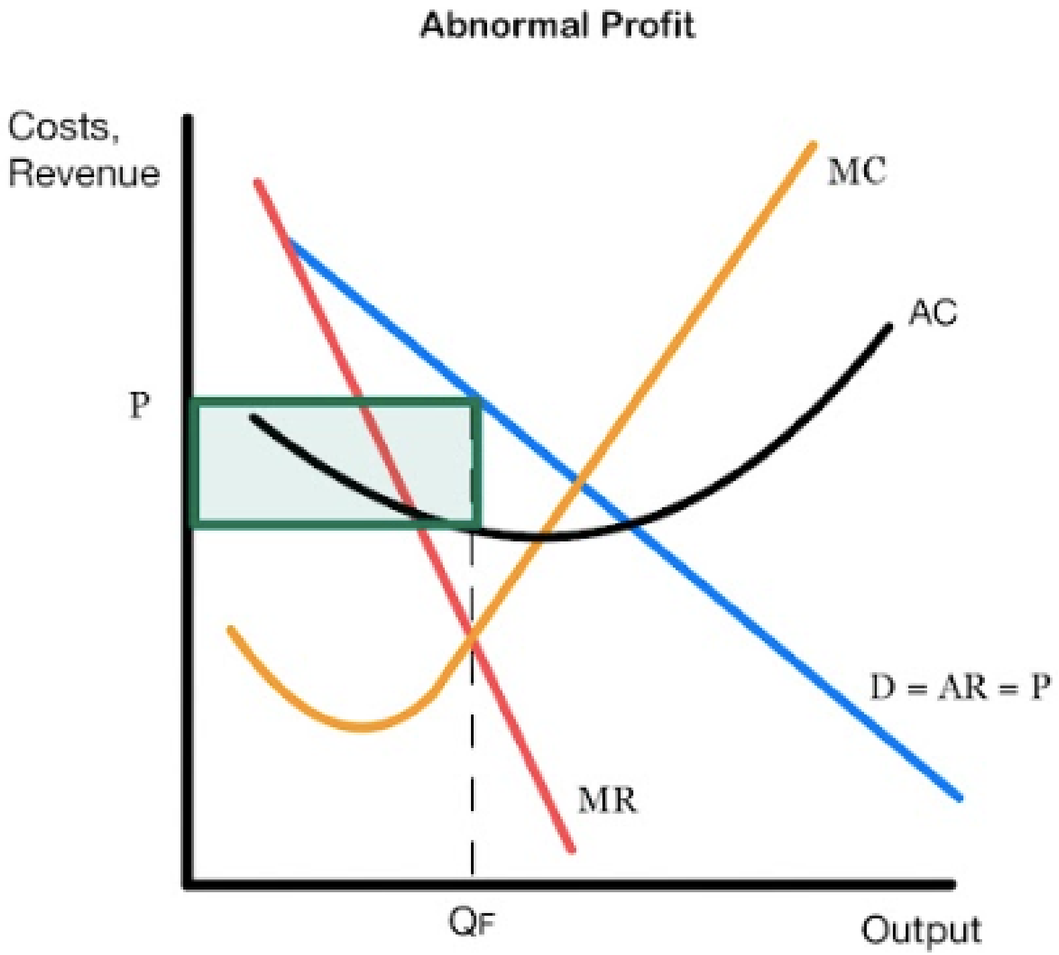
1. **Differentiation means MR is still not equal to demand but more firms offer substitutes so therefore, MR and Demand are more elastic.**
2. **Abnormal profits and losses only in the short-run. Normal profit in the long-run**

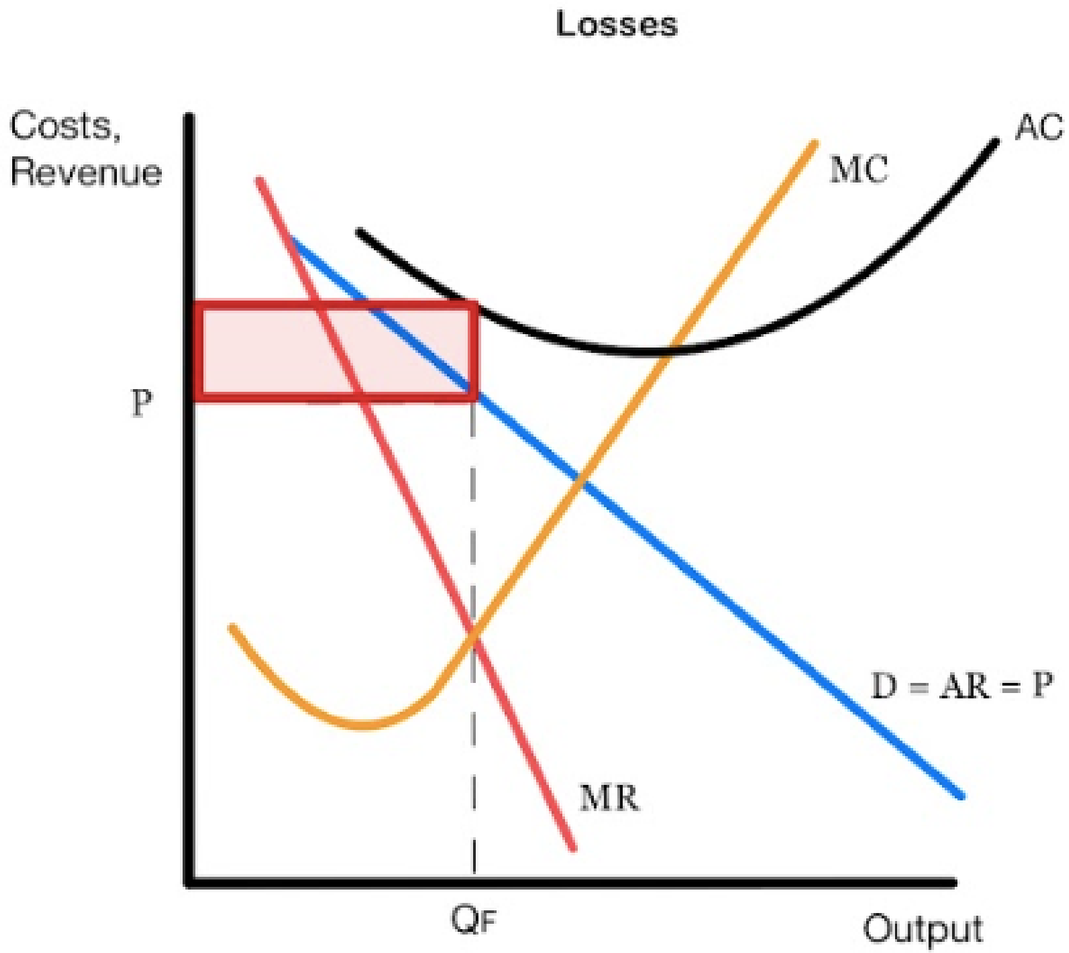






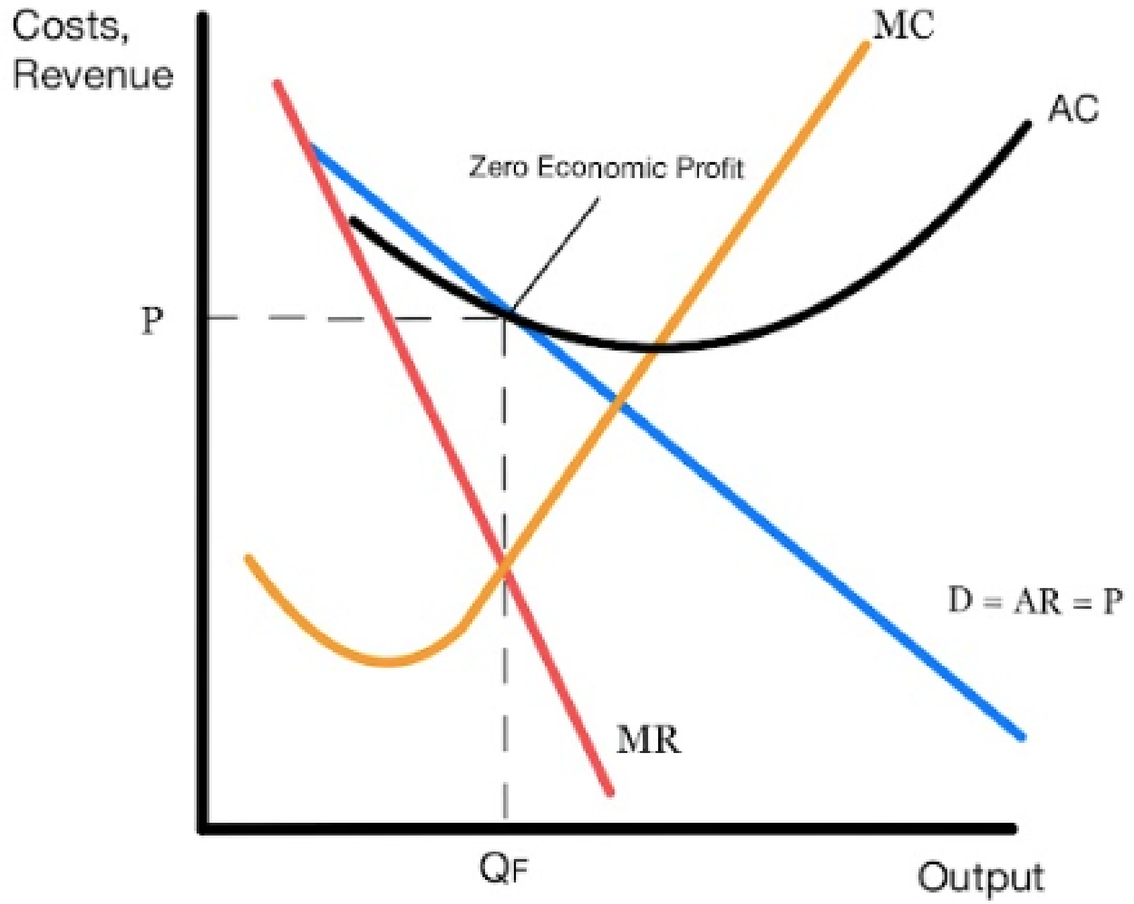
Graphing Monopolistic Competition





Graphing Monopolistic Competition

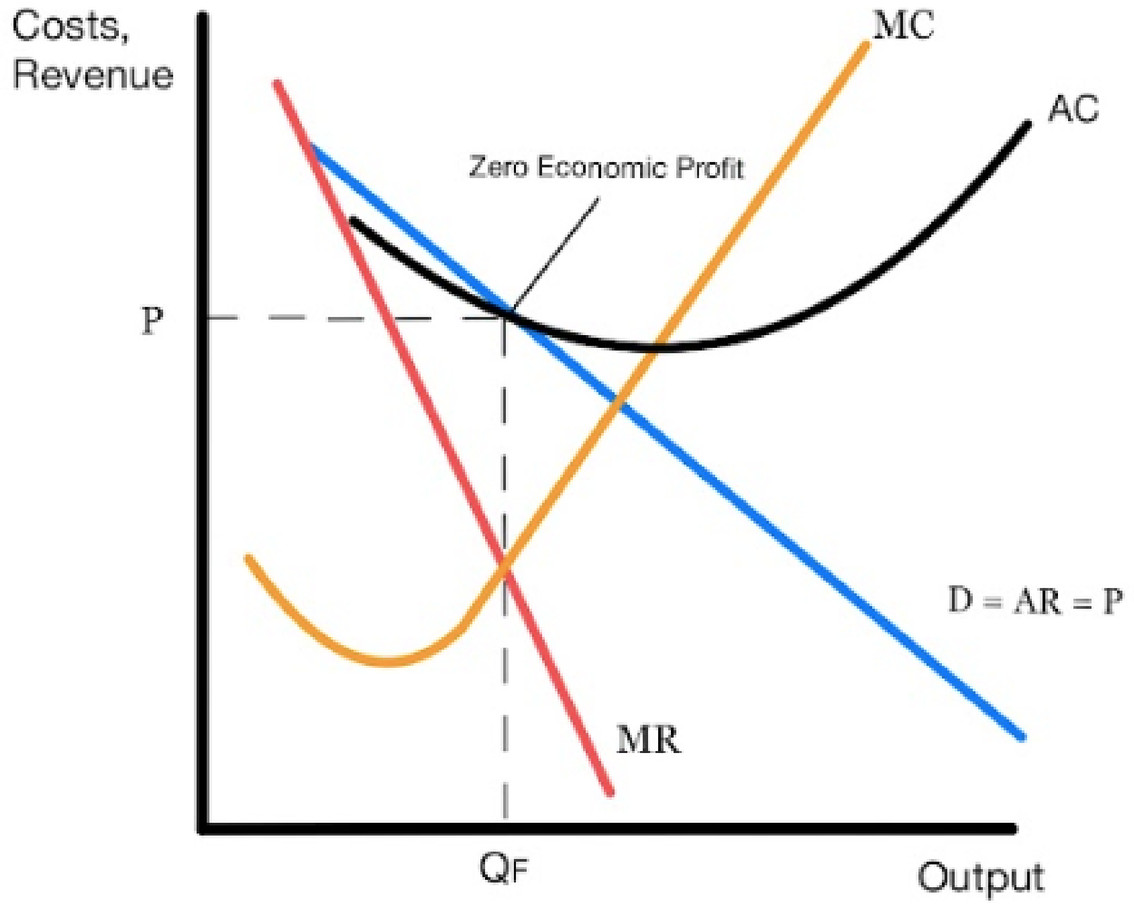
Due to low barriers of entry, profit will attract other firms to enter and steal demand. The demand curve will shift accordingly. **In the long-run equilibrium, there will always be normal profit.**



Evaluation of Monopolistic Competition

Efficiency

Not allocatively as they charge a higher price than they should. (P != MC)



Oligopoly

Oligopoly

Characteristics

- A few large firms
- Identical or Differentiated products
- High barriers to entry (easy for firms to enter and exit the market)
- Limited market power
- Strong **interdependence** between firms

Example: Gas Stations, Airlines, Internet/Mobile Providers,

Sources of Market Power

- Economies of Scale
- High Start-Up Costs
- Ownership of Raw Materials

Interdependence

Definition

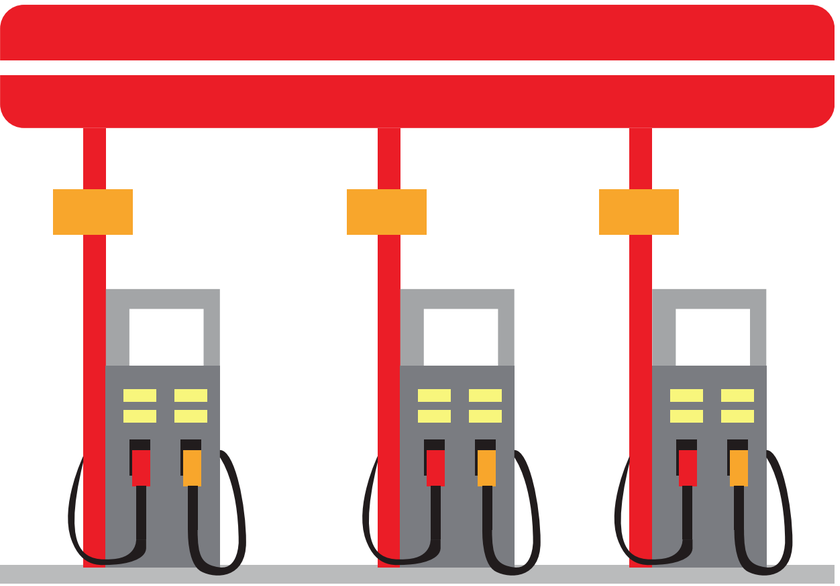
the dependence of two or more people or things on each other.

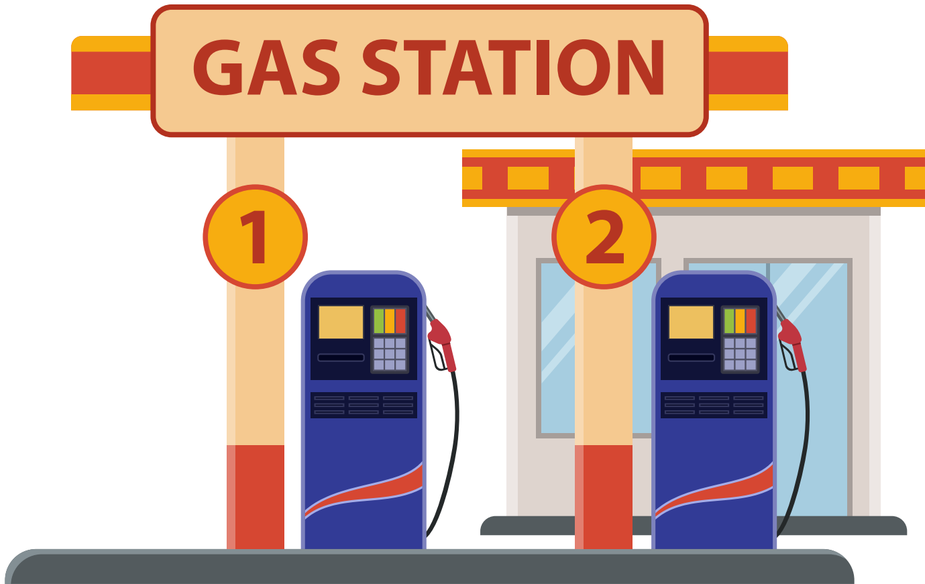
In an oligopoly, each firm has a significant share of market power and can therefore influence the market. Therefore, each firm must monitor other firms closely.

Interdependence

Oligopolies have an incentive to collude (work together to set prices). If Oligopolies collude, they essentially become a monopoly.

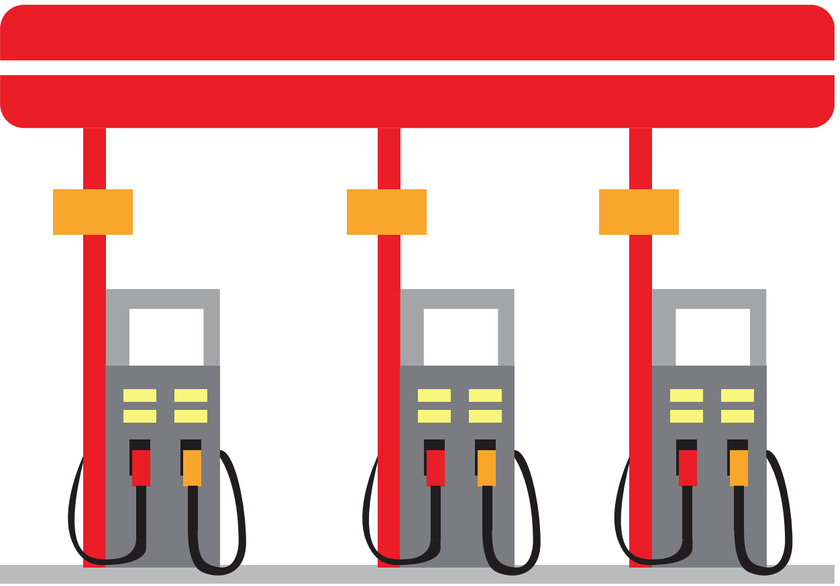
Simultaneously, firms may also desire to compete with one another to gain higher market shares.

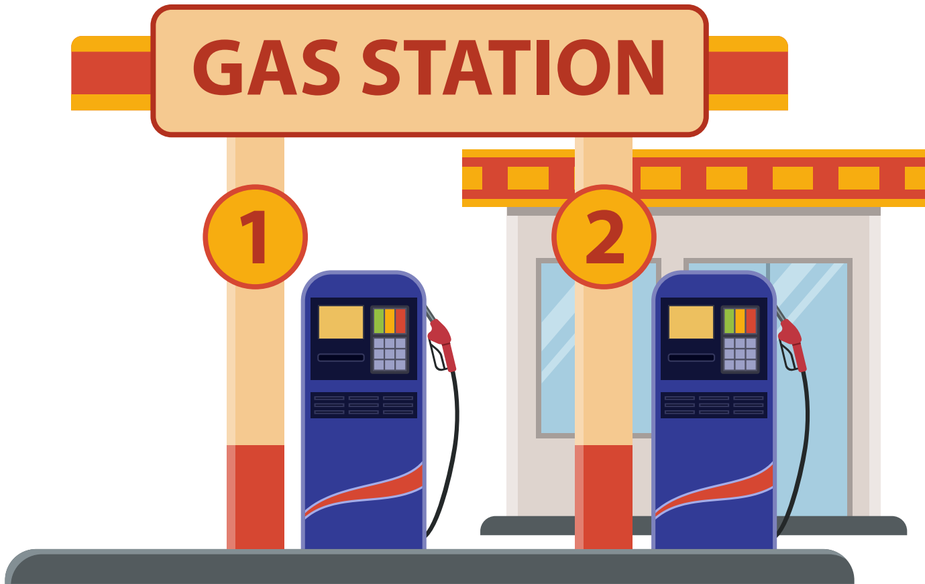




Interdependence

Competing firms may try to always set the lowest prices, but this can trigger a price war, which would result in both firms losing profit.

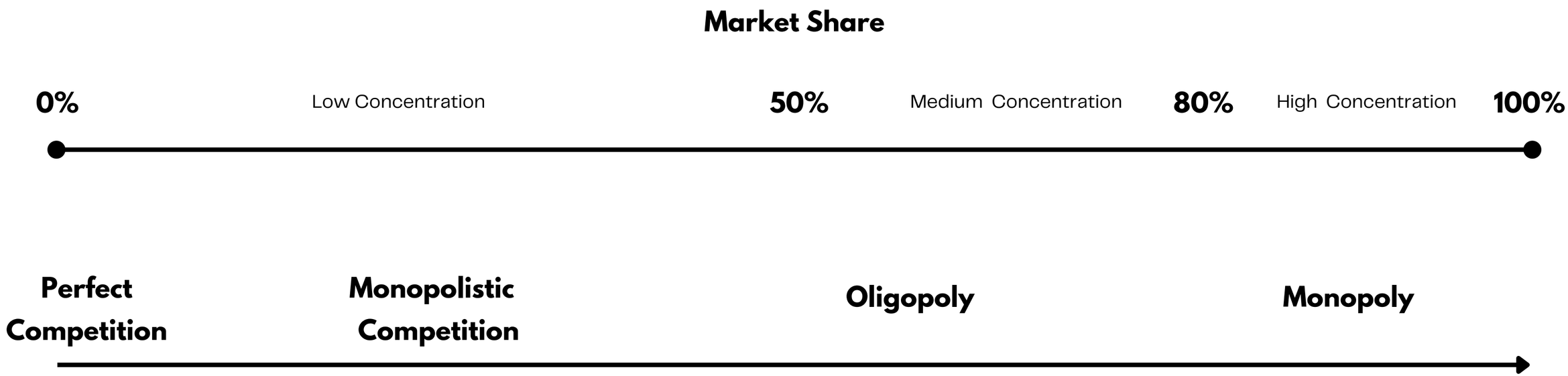




How to tell if an industry is an Oligopoly, Monopoly, or Monopolistic Competition?

Use a Concentration Ratio

CR4 Ratio takes 4 of the largest firms and measures their combined market share concentration.



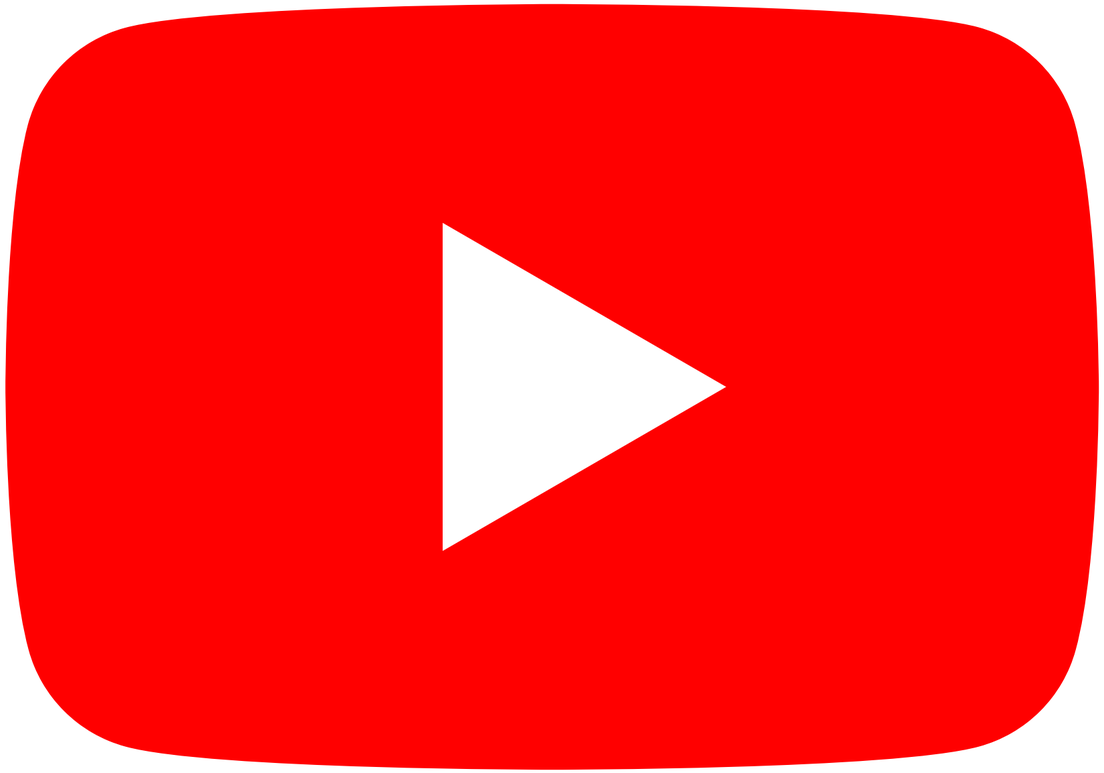
Game Theory

Definition

Game Theory

The study of how individuals behave in strategic situations.

When using game theory, you make decisions based on what your opponent will likely do. (Interdependence)



John Nash Game Theory - A Beautiful Mind

Interdependence

Because Oligopolies are interdependent, firms engage in interdependent strategic thinking.

Do these firms have an incentive to Collude? Or Compete?

Collusion

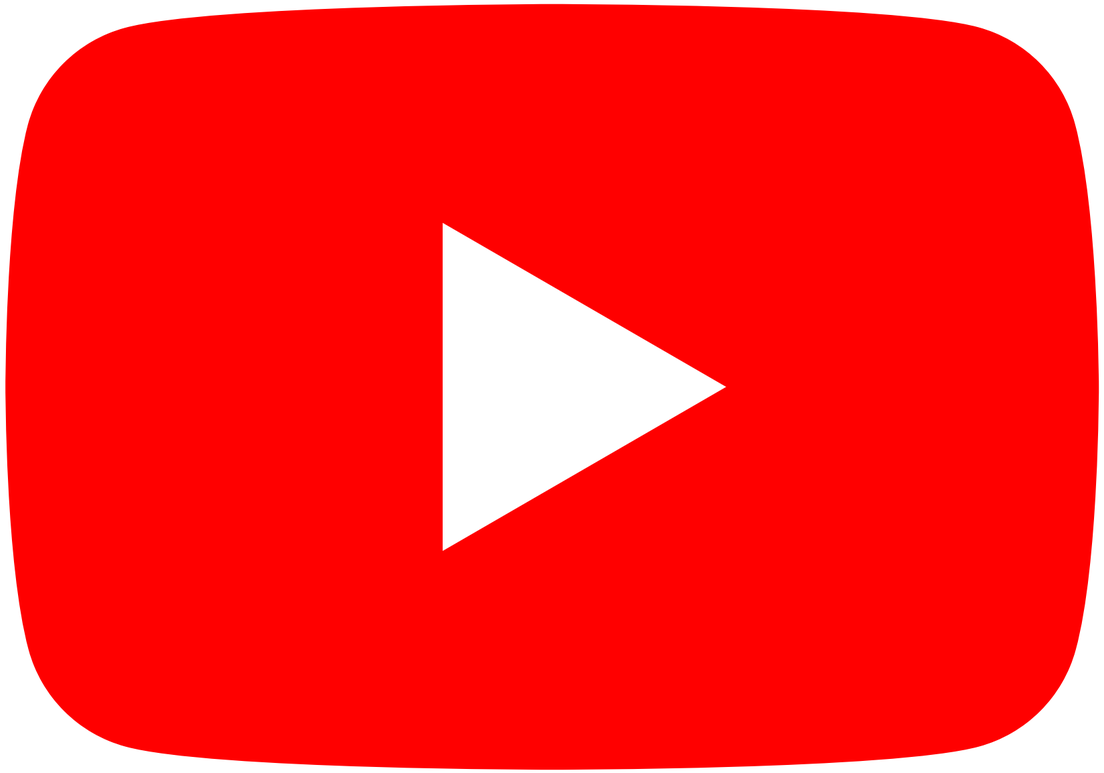
When firms collude, they act as one large firm and are able to set prices high to make abnormal profits.

A colluding oligopoly (Cartel) essentially behaves like a monopoly. Colluding between firms is typically illegal.

Compete

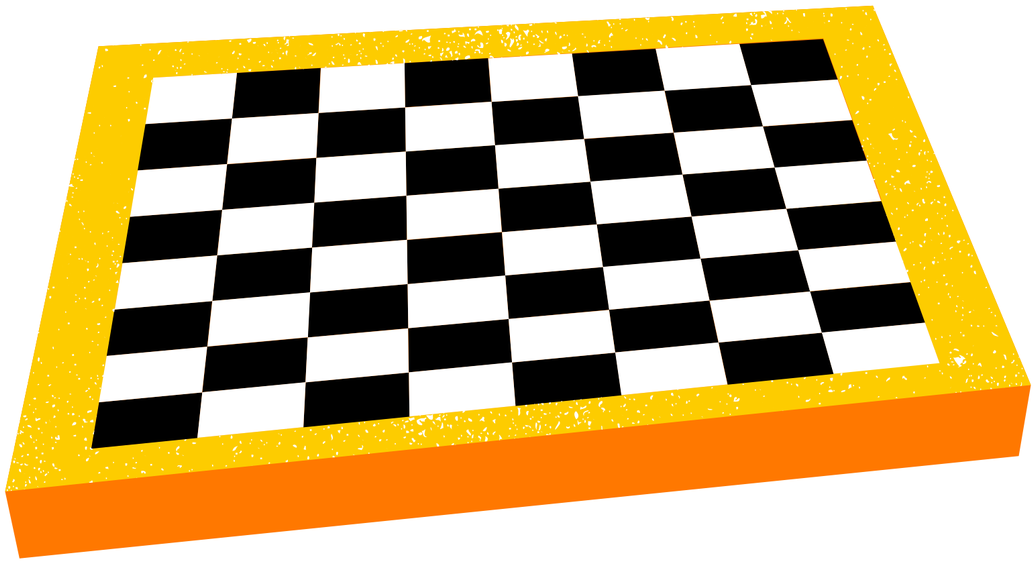
Firms also have an incentive to compete by lowering prices to gain market share.

Greater market share leads to more price control and greater revenue.



Ted Talk - Game Theory

Game Theory Matrix



Prisoners Dilemma

You and your friend rob a bank and get caught. Now the police are questioning, put yourself in the position of either Prisoner A or B. What should you do, confess or stay silent? Why?

		Prisoner B: Stay Silent	Prisoner B: Confess
Prisoner A	Stay Silent	Both serve 1 Year	A serves 5 years B goes free
	Confess	B serves 5 years A goes free	Both serve 3 years

Dominant vs Non-Dominant

Dominant Strategy – There is one choice you should always make, regardless of your opponent's decision.

Non-Dominant Strategy – Your best choice is dependent upon your opponent's decision

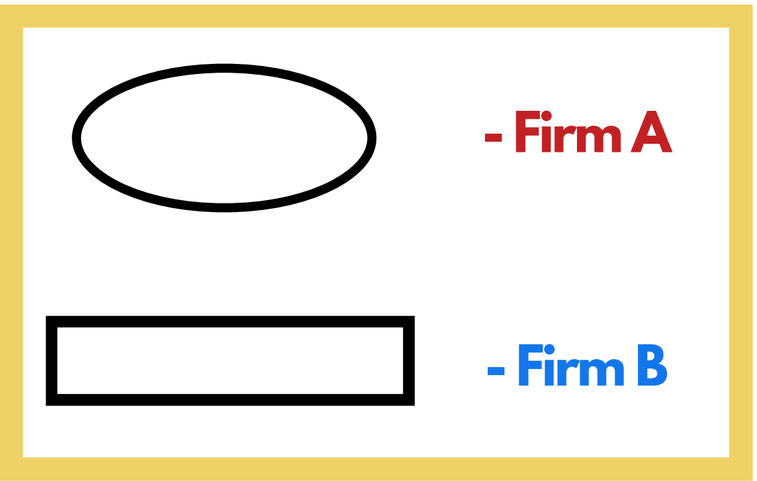
Does one firm in this matrix have a dominant strategy? Explain in writing.

		Firm B: Price High	Firm B: Price Low
Firm A: Price High		Firm A: $100 Profit Firm B: $50 Profit	Firm A: $60 Profit Firm B: $90 Profit
Firm A: Price Low		Firm A: $50 Profit Firm B: $40 Profit	Firm A: $20 Profit Firm B: $10 Profit

Dominant vs Non-Dominant

Firm A has a dominant strategy to always price high (100>50 and 60>20).

Firm B does not have a dominant strategy.

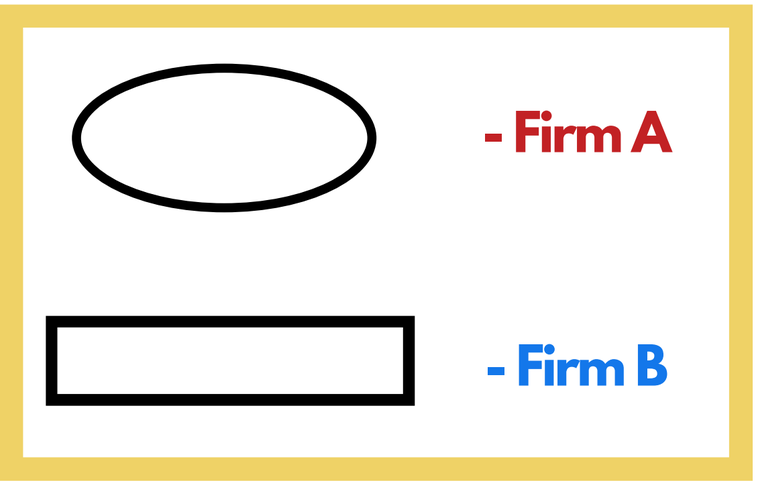


Firm A \ Firm B	Price High	Price Low
Price High	$100 Profit $50 Profit	$60 Profit $90 Profit
Price Low	$50 Profit $40 Profit	$20 Profit $10 Profit

Nash Equilibrium

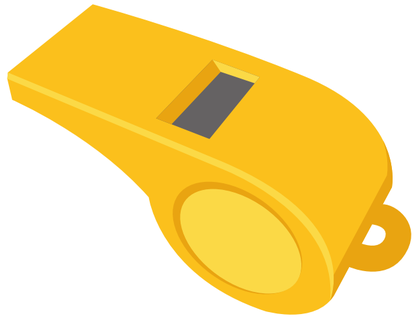
When firms choose the optimal outcome with no incentive to change.

Since Firm A will always go high, Firm B will always price low. Neither firm has an incentive to change.

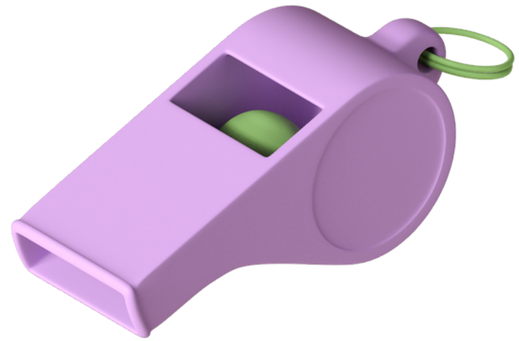


Firm A \ Firm B	Price High	Price Low
Price High	$100 Profit $50 Profit	$60 Profit $90 Profit
Price Low	$50 Profit $40 Profit	$20 Profit $10 Profit

Practice

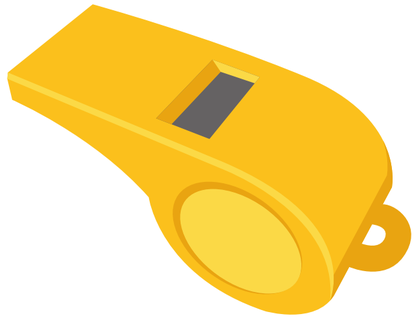


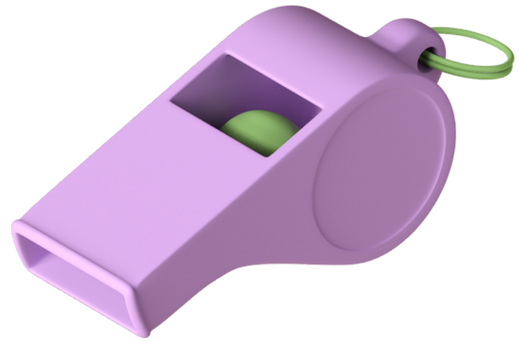
What is each firm's dominant strategy? Explain why.
Is there a Nash Equilibrium? Explain why.



Firm A \ Firm B	Price High	Price Low
Price High	$90 Profit $40 Profit	$50 Profit $60 Profit
Price Low	$80 Profit $70 Profit	$70 Profit $80 Profit

Practice





Firm A – No dominant strategy

Firm B – Dominant strategy of pricing low always

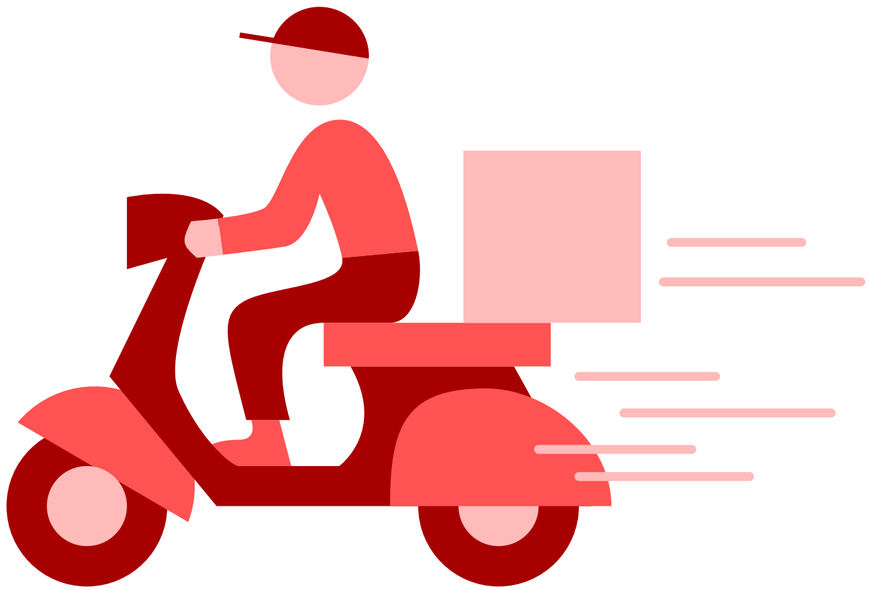
Firm A \ Firm B	Price High	Price Low
Price High	$90 Profit $40 Profit	$50 Profit $60 Profit
Price Low	$80 Profit $70 Profit	$70 Profit $80 Profit

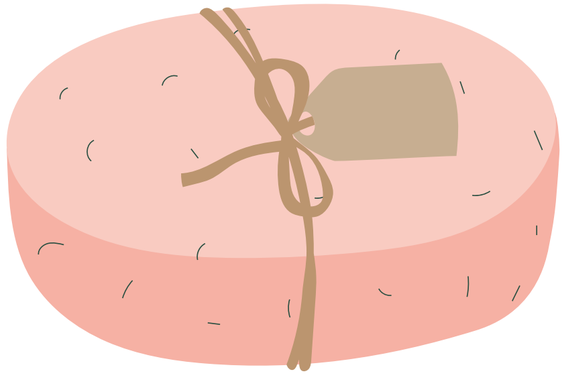
Non-Price Competition

Non-Price Competition

Since firms in oligopolies prefer to avoid engaging in a price war, they must find alternative ways to gain market power and compete in alternative ways such as:

- Branding, advertising, free delivery, packaging, rewards,





Evaluation of Oligopoly

Evaluation of Oligopoly

Advantages

- **Economies of Scale can be achieved**
- **Abnormal profit allows for Research and Development for technological innovation**

Evaluation of Oligopoly

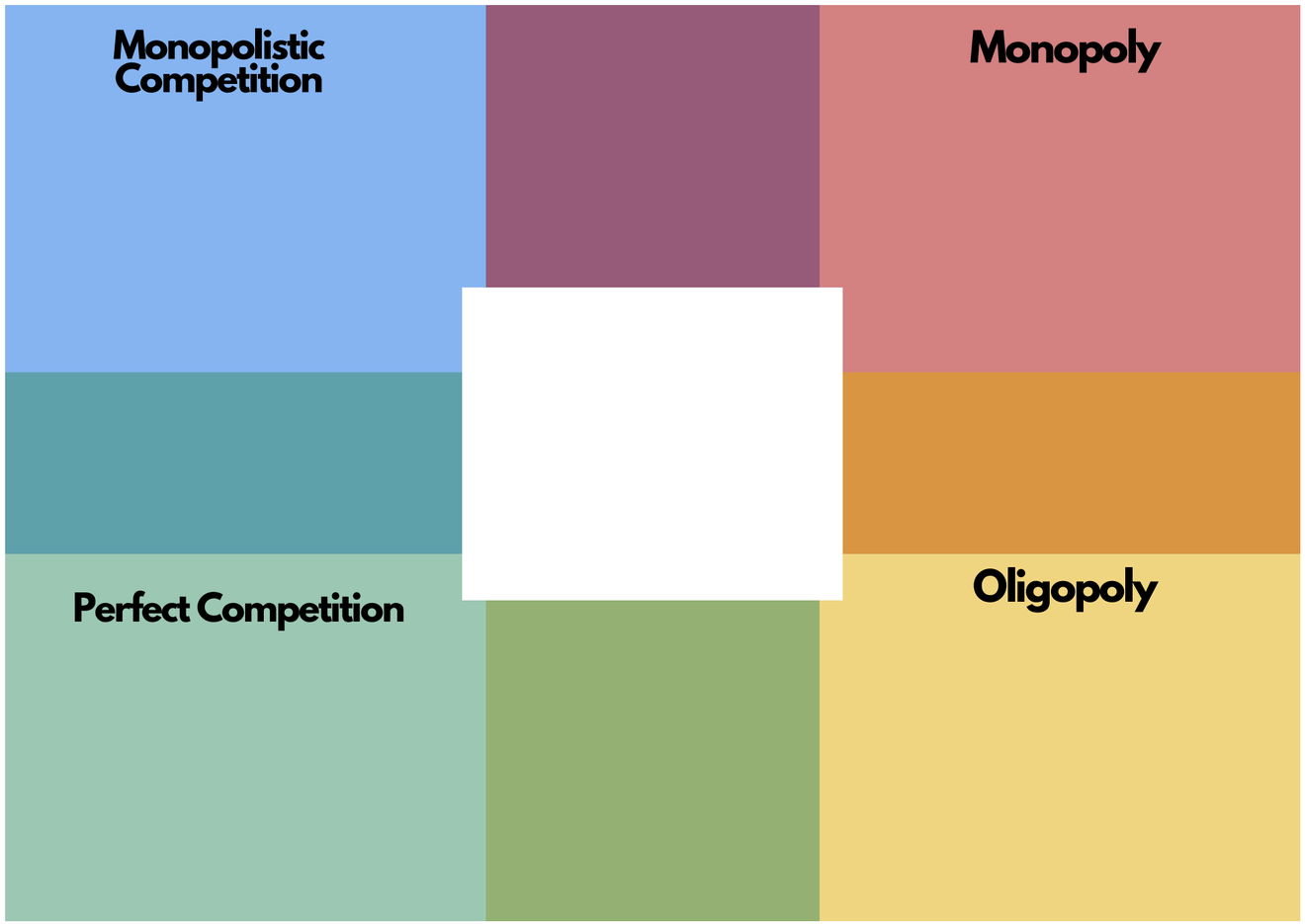
Disadvantages

- Not allocatively efficient
- Higher prices and lower quantities than perfect competition
- Less innovative due to lack of competition
- Potential for illegal collusion

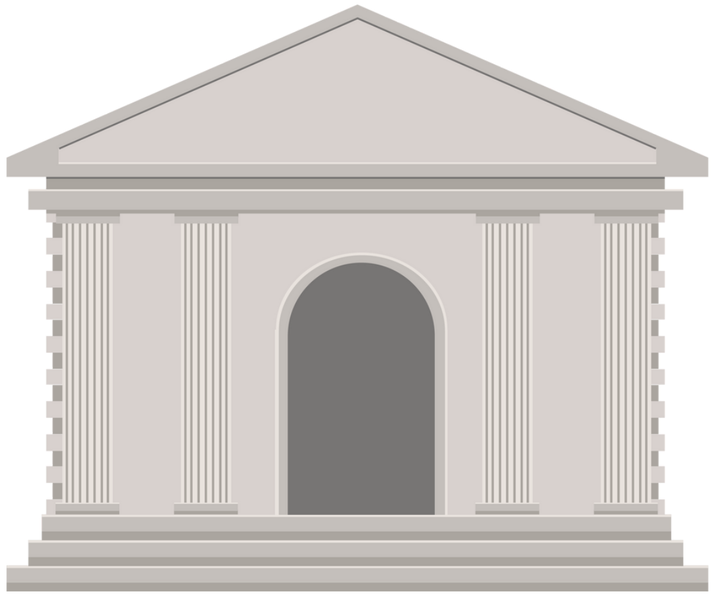
Review

Venn Diagram

Create a Venn Diagram with each market structure and list unique features but also similarities.



Government Responses to Market Dominance



Government Intervention

Governments may intervene to attempt to solve market power dominance by the use of:

- **Legislation**
  - They could put laws in place to prevent the 4 largest companies from gaining more than 60% of the market share.
- **Government Ownership (Nationalisation)**
  - Governments could take over an industry to reduce the abuse of market dominance. (Utilities)
- **Regulation**
  - Governments can set up regulations designed to limit market shares such as licensing, inspections, or the issuing of fines.

Practice Question

Paper 1

(a) Using diagrams, explain why a perfectly competitive firm can make economic (abnormal) profit only in the short run. *[10 marks]*

(b) Discuss the consequences of a perfectly competitive industry becoming a monopoly. *[15 marks]*

Mark Scheme

(a) Using diagrams, explain why a perfectly competitive firm can make economic (abnormal) profit only in the short run. ***[10 marks]***

Answers **may** include:

- definitions of perfect competition, economic (abnormal) profit and short run
- diagrams of economic (abnormal) profit in the short run and normal profit (zero economic profit) in the long run
- an explanation of how economic (abnormal) profit acts as a signal for new firms to enter the market, shifting market supply to the right until normal profits are restored
- examples of markets where this might occur.

Mark Scheme

Discuss the consequences of a perfectly competitive industry becoming a monopoly. ***[15 marks]***

N.B. It should be noted that definitions, theory, and examples that have already been given in part (a), and then referred to in part (b) should be rewarded.

Answers **may** include:

- definitions of monopoly and perfect competition
- diagrams to compare monopoly with perfect competition
- an explanation of how price, output, welfare, costs and efficiency would be affected when a perfectly competitive industry becomes a monopoly
- examples of instances to which this might be, or has been, applied
- synthesis or evaluation (discuss).

Command term
"Discuss" requires candidates to offer a considered and balanced review that includes a range of arguments, factors or hypotheses. For example, candidates may point to advantages of monopoly such as economies of scale, research and development, *etc*.

Discussion **may** include: the advantages and disadvantages of a market becoming a monopoly with an overall assessment.

Examiners should be aware that candidates may take a different approach which, if appropriate, should be rewarded.

Opinions or conclusions should be presented clearly and should be supported by appropriate examples.

Enjoying The Content?

Visit bananaomics.com to purchase package deals with discount prices!

BANANAOMICS