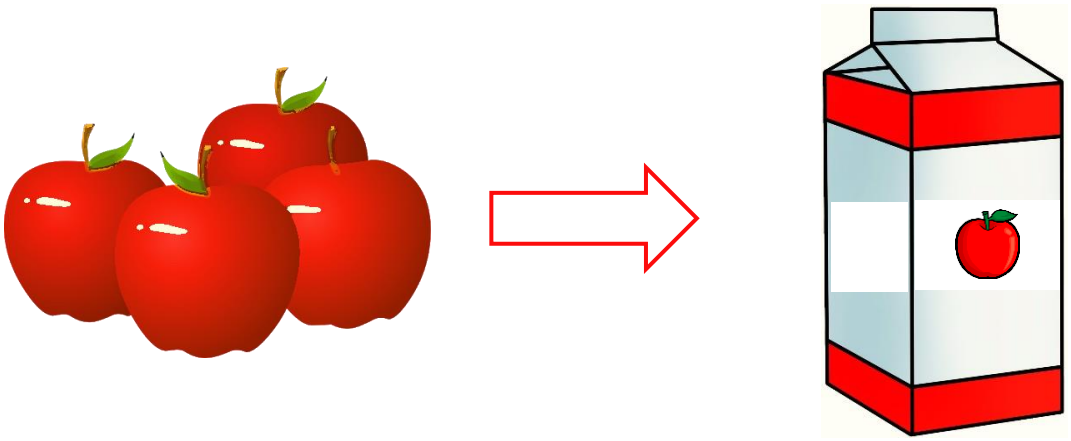
Topic 3 - Production and Costs



I can compare and contrast how output and costs change when a firm employs more of all the resources (long run) and when a firm employs more of only some resources (short run).

J. Caruana

Section A – What is Production?

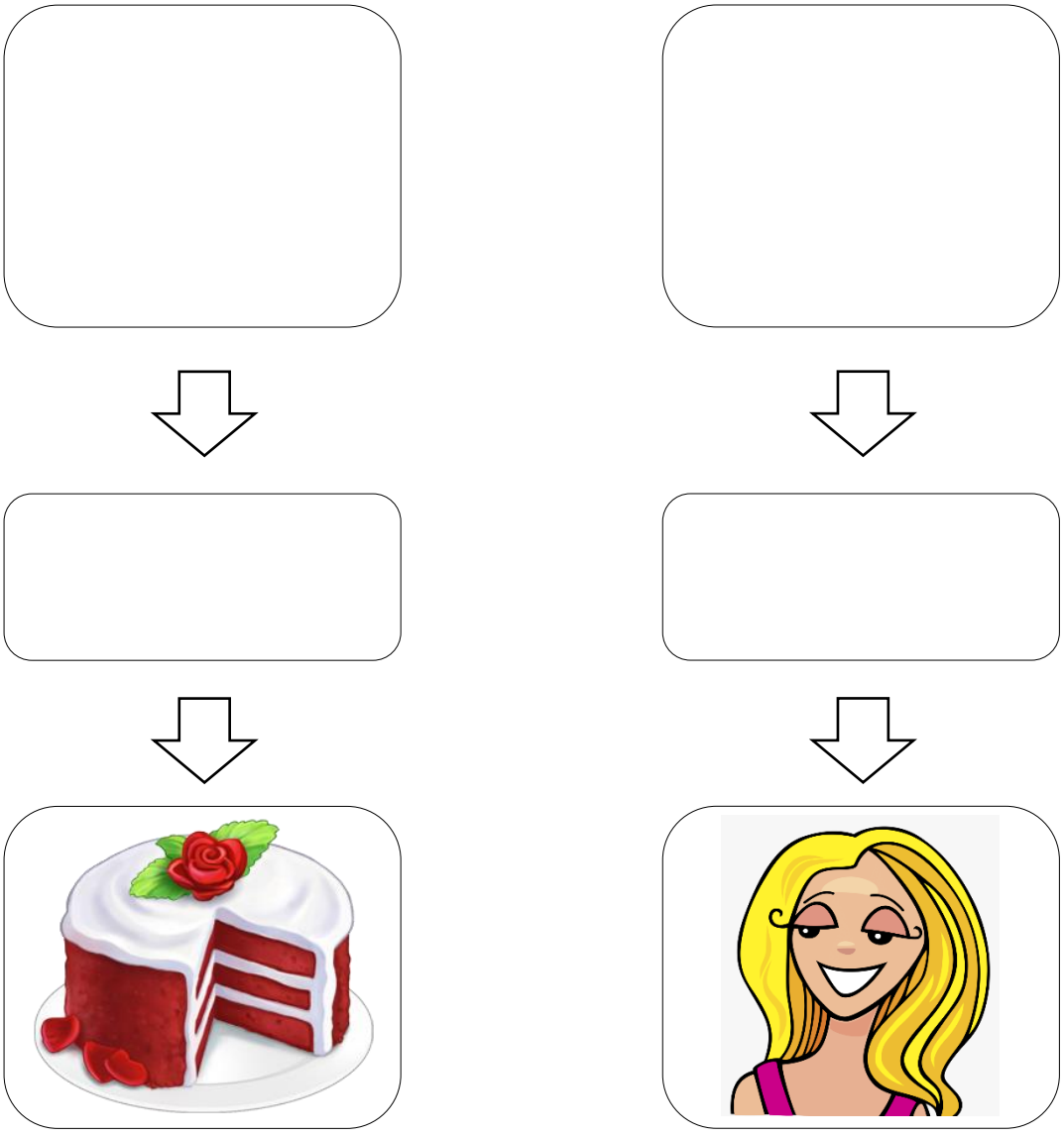
Learning Outcomes:

1. Define production.
2. Classify the output of the production process into goods and services.
3. Classify the output of goods into Consumer Goods and Producer Goods.
4. Classify the output of services into Personal Services and Commercial Services.

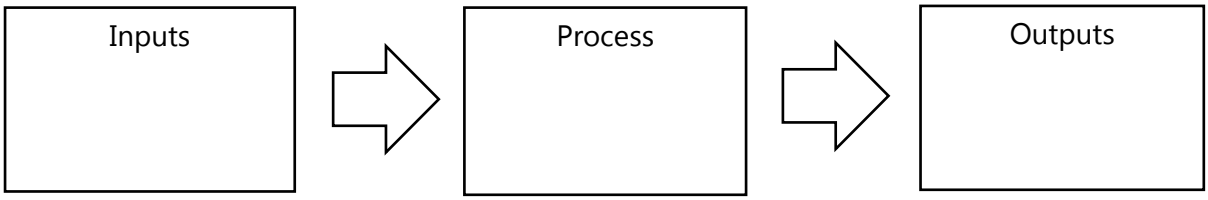
What do I need to ...

Prepare a cake?

Dye my hair blonde?



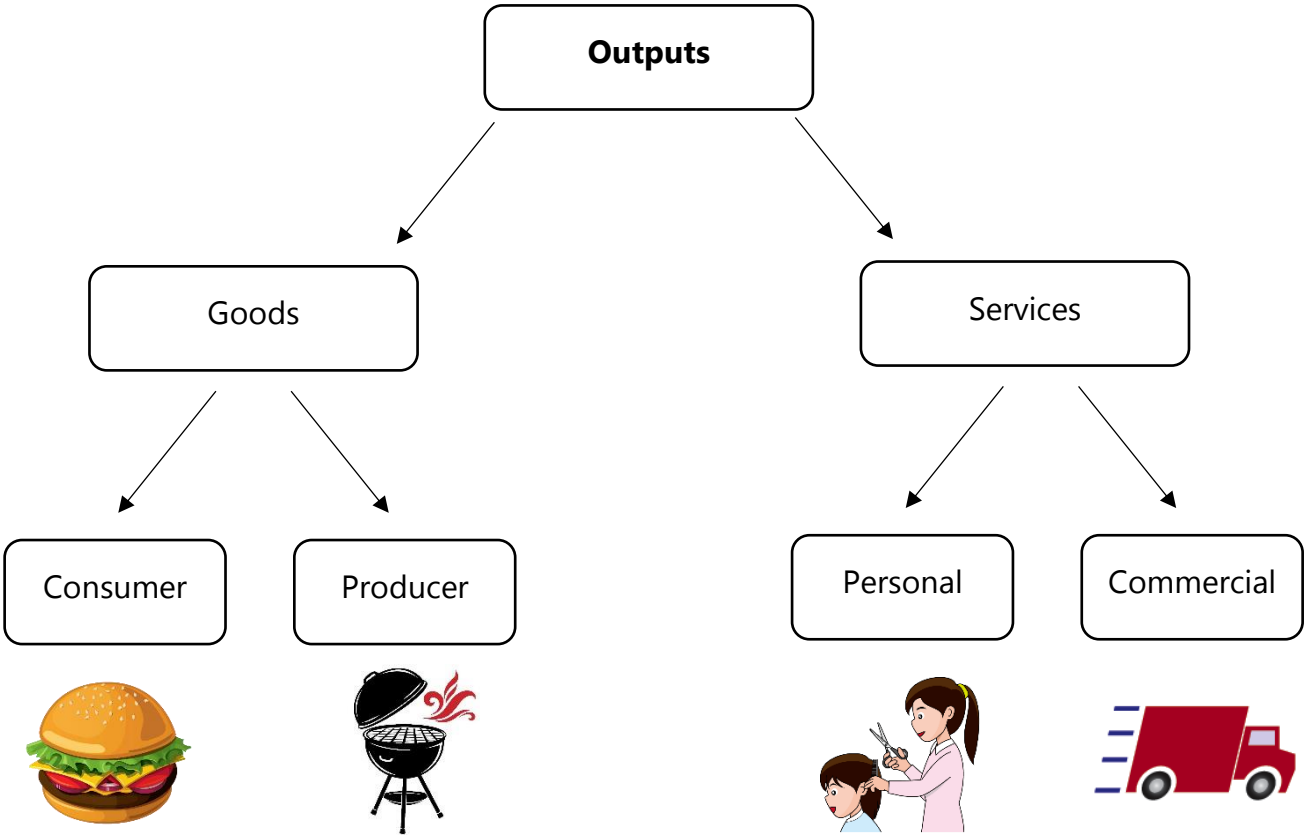
Production refers to the creation of goods and services from available resources. So, production can be described as the process of converting inputs into outputs to satisfy people's wants. So, the production process is complete once the goods and services reach the people who want them.



A **Service** is an action that a person does for someone else. For example: _____

Goods are the physical items that are bought. For example: _____

_____



Two Types of Goods

Goods are sub-divided into consumer goods and producer goods.

1. **Consumer Goods** – Goods produced for use by final consumers in order to satisfy consumer wants.
2. **Producer Goods** – Goods produced which are used in the production process of another good (they are not wanted for their own sake).
   For example _____
   _____
   _____



Two Types of Services

Services are sub-divided into consumer goods and producer goods.

1. **Personal/Direct Services** – Services that are directly given to the person that wants them. For example _____
   _____
2. **Commercial/Indirect/Impersonal Services** – Services that a firm provides to another firm. For example _____
   _____


Exercises Set A

1. Is it a good or service? Tick the correct category for each of the following.

	Good	*Service*
Packet of biscuits		
Massage		
Haircut		
Mobile phone		
Sandwich		
Fitness session		
Taxi journey		
Bottle of water		

2. Classify the following by ticking the appropriate heading.

	Consumer Goods	*Producer Goods*	*Personal Services*	*Impersonal Services*
Cleaning of offices				
Chicken wrap				
Physics revision classes				
Cruise liner				
Home kitchen utensils				
Restaurant kitchen utensils				
Soap				
Courier service (personal)				
Financial advice for a business				

3. Answer the following questions.

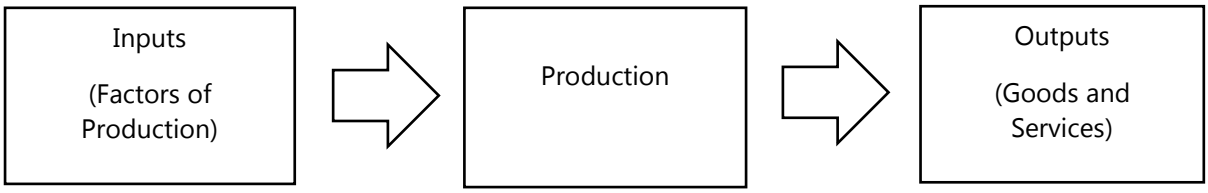
a. Define the term "production".

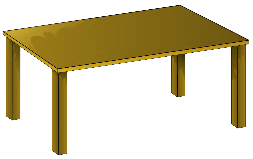
b. Using you own examples, explain the difference between a good and a service.

Section B – The Factors of Production

Learning Outcomes:

1. Define factors of production.
2. Classify the factors of production into Land, Labour, Capital, and Entrepreneurship.
3. Assess the importance of each of the factors of production.





List the items needed to produce a wooden table – the inputs!

The term **Factors of Production** refers to the resources that are required to produce goods and services. The factors of production are classified into four types: land, labour, capital, and entrepreneurship.

1. **Land** - is a term used to describe all those inputs that are natural resources (come from nature). So, it includes: anything that comes from seas and rivers of the world, trees and plants, all sorts of minerals from the ground, chemicals from the air, and land itself. For example _____
   _____

2. **Labour** – is a term used to refer to human effort in the production of goods and services. They provide both physical and mental effort in order to design, make and sell goods and services. The more skilled/talented the number of workers, the _____ good quality goods and services are produced.

3. **Capital** – is a term used to refer to all those artificial (man-made) inputs in the production process. For example: _____
   _____

4. **Entrepreneurship** – is a term used to refer to the people who control and manage firms using their business-know-how. They are the people who take the risks and decisions to run a firm successfully.

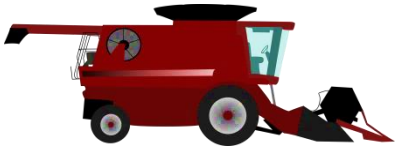
Production of all goods and services requires the four factors of production in varying proportions. For example, a school will require more capital resources and labour than natural resources; conversely, a soft-drink manufacturer will require more capital resources than labour resources.

Activity 1.4 (Book page 12)

Natural Resources	Human Resources	Human-made Resources

Exercises Set B

1. Identify the factor of production from picture.



_____ _____ _____ _____

2. Read the text and answer the questions.

There are four factors of production: land, labour, capital, and entrepreneurship. Factors of production are scarce resources. They are organized in firms by entrepreneurs to produce goods and services.

a. Identify **TWO** examples of land, labour, and capital resources that are used in the production of the following products:

I. Pizza (consumer good)

Land	Labour	Capital

II. Cruise ship (producer good)

Land	Labour	Capital

III. Haircut and Blow-dry (personal service)

Land	Labour	Capital

b. Using examples, analyse how all four factors of production are needed in the production of good or service of your choice.

Section C – The Three Economic Sectors

Learning Outcomes:

1. Identify productive activities in each of the primary, secondary and tertiary sectors of the economy.
2. Give examples of productive activities in each economic sector carried out in the Maltese Islands.
3. Classify production into sectors (primary, secondary, and tertiary).
4. Assess the importance of each of the sectors of production.

Many firms take part in the production process of a good. We classify them in stages of production of what they do – the process of production is divided into three stages.

Stages of Production – Life of a chair		
Extraction of Resources	**Manufacturing**	**Provision of goods and services**

1. The **Primary/Extractive stage** – work carried out by industries that extract the gifts of nature from the earth's surface, from beneath the earth's surface, and from the seas and oceans. This stage includes activities such as agriculture, farming, fishing, quarrying, mining, oil extraction and the timber industry.

2. The **Secondary/Manufacturing stage** - work which processes the output of the Primary stage (raw materials) into finished products. This stage includes activities such as building, engineering, and the manufacture of cars, furniture, clothing, etc.

3. The **Tertiary/Services stage** – work which provides services rather than goods. Sales, repair services, banking, and insurance are all part of the tertiary industry. People who work in the tertiary sector include workers in the tourism and hospitality industry, doctors, couriers, and business consultants.

Malta and its Economic Sectors

	Primary Work	Secondary Work	Tertiary Work
Malta 1974	7%	34%	60%
Malta 2006	3%	22%	75%
Malta 2015	1.4%	11.4%	87.2%

The table above shows Gross Value Added (GVA) for Malta in 1974, 2006, and 2015. The **GVA** is the value of the output of the goods and services produced in the country during that year (100%).

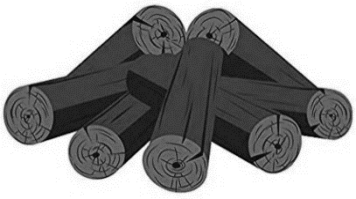
Fill in the blanks with the following terms

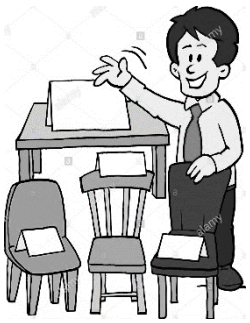
Chain	Plants	Tertiary	Manufacturing	First	Goods	Services
Minerals	Wood	Animals	Cars	Selling	Raw materials	Natural

1. Primary stage/industry
   - It is the _____ stage of production, as many of the _____ are grown or dug out of the ground are used to produce something else.
   - Includes firms which produce _____ resources by growing _____, digging for _____ or breeding _____

2. Secondary stage/industry
   - Includes firms engaging in the _____ process, that is, the use of raw materials to make other _____.
   - Examples of the secondary industry: firms manufacturing paper from _____, firms manufacturing _____ from metal.

3. Tertiary stage/industry
   - Firms which provide _____ (such as transportation and insurance), and
   - Firms which provide the _____ link in the _____ of production by _____ goods to the consumer.





Section D – Specialisation

Learning Outcomes:

1. Define Specialisation.
2. Define Specialisation by Product.
3. Define Specialisation by Process (Division of Labour).
4. Assess the advantages and disadvantages of Division of Labour and how these disadvantages may be overcome.

Self-Sufficient No More

Primitive people used to be self-sufficient

Everyone would cultivate own land

Live on his own animals

Very similar to a one-man band

However, people were not very good

At doing everything themselves

Some were not good at farming

Some were not good at hunting

Resources were being wasted

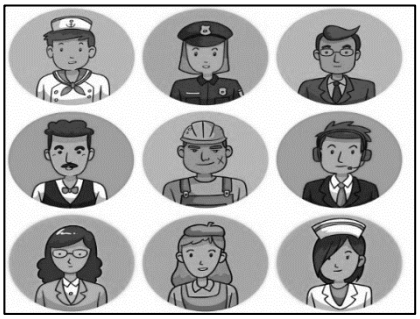
At times they were getting hungry with no rest

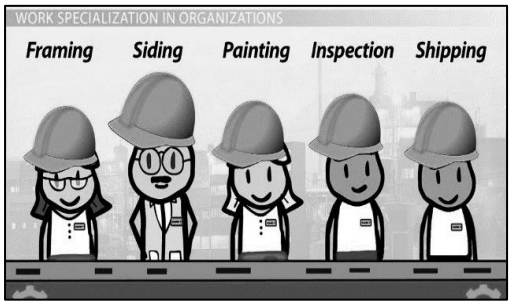
They had to specialise

In the tasks they were able to do best

Specialisation is when one individual, region, or country concentrates in making one good. Specialisation takes place at different levels:

- At the individual level
- At the organisational level
- At the industry level
- At the country level.





Class Simulation Activity – Specialisation by Product or by Process

Group Members - _____

1. **Specialisation by Product (time allowed is 10 minutes)**

The group should have:

- Kebab sticks
- 4 A4 papers
- 4 A4 red papers

- 24 George cross picture cut-outs
- 4 glue sticks
- 4 scissors

The group is required to produce Maltese mini-flags during the 10 minutes. The aim is to produce as much units of output as possible. One of the group members will be in charge of the stopwatch.

Instructions:

- Cut the white paper into 6 strips of paper (length – 4.9cm).
- Cut the red paper into 6 strips of paper (length – 4.9cm) and then split the paper in half.
- Glue the red paper on the left-hand side and on the right-hand side of the white strip of paper.
- Glue the George Cross on both sides.
- Glue the flag with the kebab sticks.

Number of units in 10 minutes - _____

2. **Specialisation by Process (time allowed is 10 minutes)**

With the same resources, the group leader (_____) should divide the tasks between all members and work as a group.

Number of units in 10 minutes - _____

Observation - _____

_____

_____

Definitions:

Specialisation by Product - _____

_____

_____

_____

Specialisation by Process/Division of Labour - _____

_____

_____

_____

Economics in Action – The Ford Model T (Book page 182)

Division of Labour – A particular type of specialisation where the production of a good is broken into many separate tasks each performed by one person.

Advantages of Division of Labour

1. More goods and services can be produced as continually repeating a task improves the skill of the worker.
2. Each task requires little skill so workers are more trained easily.
3. Full use is made of everyone's ability – workers can specialise in tasks best suited to their abilities.
4. Time is not wasted setting up tools for different tasks and in moving between jobs.
5. Expensive machinery can be used all the time – it makes it a worthwhile investment.

Disadvantages of Division of Labour

1. Continually repeating a task may become boring. What can firms do to combat this? _____

   _____

2. Workers may feel alienated.

   _____

   _____

   _____

   _____

   _____

3. Some workers receive very narrow training and may not be able to find alternative jobs.
4. Processes become too dependent upon each other – if one machine break down, the whole process stops.
5. Mass-produced goods lack variety.

As a result of this, workers tend to feel less motivated – it affects productivity and output.

One must also see these advantages and disadvantages from various points of view. For example, the advantages of the saving of time in moving from one job to another and in the training of workers is an advantage **to the firm** in that it decreases its average costs of production, **to the worker** in that he can start earning money quicker than if he had to waste time learning about the whole process and **to the consumer** in that he or she gets the goods quicker and cheaper.

Exercises Set C

1. Circle the Correct Answer

1. Which of the following would be regarded as secondary production?

   a. Insurance.
   b. Coal-mining.
   c. Farming.
   d. Engineering.
   e. Entertaining.

2. Which stage of production covers house-building?

   a. Primary.
   b. Secondary.
   c. Tertiary.
   d. Quarterly.

3. One advantage of division of labour is:

   a. Work becomes boring.
   b. More goods and services are produced.
   c. More training is needed.
   d. People become too interdependent.
   e. Products become standardised.

4. In the production of which of the following commodities are we likely to find the division of labour extensively applied?

   a. Portrait painting.
   b. Disposable razors.
   c. Tailor-made suits.
   d. Craft pottery.
   e. Hairdressing.

(1 mark each)

2. Data Response Exercise – Answer the questions on the photographs below

a.

b.

c.

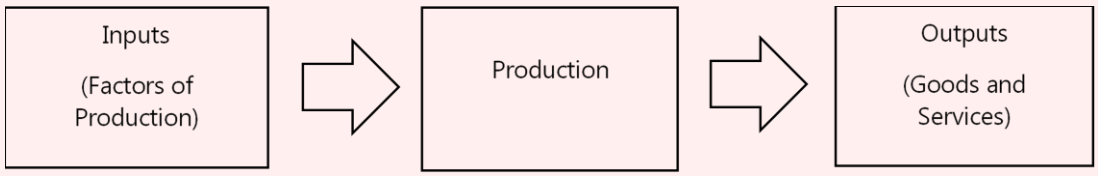
1. The photographs show different productive activities. For each photograph, identify the economic sector in which they are operating in. *(3 marks)*
2. Provide another example of an industry in the: *(3 marks)*
    I. Primary sector
    II. Secondary sector
    III. Tertiary sector
3. Photograph B shows an assembly line. Give two advantages and two disadvantages of this division of labour to: *(8 marks)*
    I. The firm
    II. The employees
4. Distinguish between 'specialisation by product' and specialisation by process'. *(4 marks)*
5. Why does division of labour often result in increased production and output? *(3 marks)*

Section E – Costs of Production

Learning Outcomes:

1. Define Total Cost, Variable Cost, and Fixed Cost.
2. Calculate Total Cost, Variable Cost, and Fixed Cost.
3. Illustrate curves (sketch, plot) depicting Total Cost, Variable Cost, and Fixed Cost.
4. Distinguish between Fixed Costs and Variable Costs.

Recap

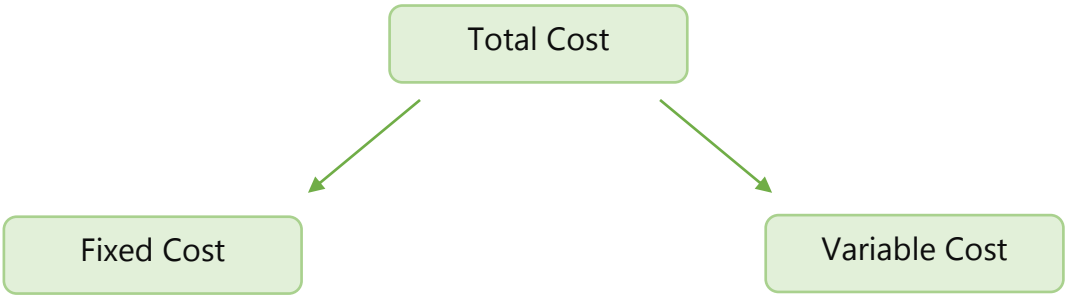


- Goods and services are produced to satisfy consumer wants.
- Production is the **process** of converting inputs into outputs.
- A firm combines the **factors of production** (_____, _____, _____, and _____) to make **goods and services**.
- The **Production Process** can be classified into three - _____, _____, and _____.

Costs of Production are the payments made by firms in the production process in order to make goods and provide services. Examples of costs of production are:

- _____ and _____ paid to employees.
- _____ paid to land owners for hiring business premises.
- Purchases of _____ and components from suppliers.
- Utility bills
- Advertising expenses.

The **Costs of Production** can be categorised into two:



Fixed Costs are those costs that have to be paid regardless of how much a firm produces or sells. These costs:

- Do not vary with the level of output,
- May be incurred before production begins, and
- Will continue to be paid once production has started, irrespective if a firm produces and sells.

Examples of Fixed Costs include: _____

_____

Variable Costs are those costs that change with the level of output. These costs:

- Need to increase in order to increase production, and
- Will not be incurred when production stops.

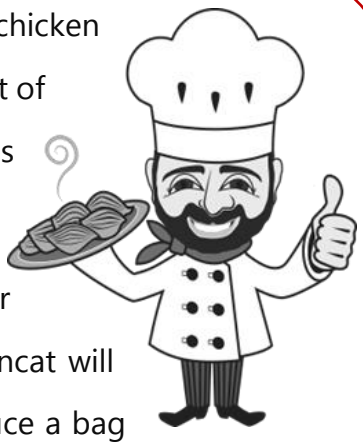
Examples of Variable Costs include: _____

_____

Total Cost refers to the sum of all fixed and variable costs of production, that is:

Read the following and answer the questions

Mr. Muscat decided to start a business and produce bags of "chicken pastizzi" for local coffee shops. He rents a small garage in the heart of the industrial estate in Mriehel for €500 a week. He also hires equipment and freezers for €250 a week.



Mr. Muscat employs another person with him, Mr. Brincat and for every bag of pastizzi they produce both Mr. Muscat and Mr. Brincat will earn €2.50 wage. The ingredients and material required to produce a bag of pastizzi cost €3.50.

Questions

a) Split the Fixed Cost and Variable Cost, and calculate the total costs of each.

Fixed Cost	
Cost Item	**€**

Variable Cost	
Cost Item	**€**

b) Define Fixed Cost and give 2 examples.

_____

_____

c) If Mr. Muscat produces 200 bags of pastizzi in a week, what is his Fixed Cost?

_____

_____

d) If Mr. Muscat produces 500 bags of pastizzi in a week, what is his Fixed Cost?

_____

_____

e) Define Variable Cost and give 2 examples.

_____

_____

f) If Mr. Muscat produces 200 bags of pastizzi, what is his Variable Cost?

_____

_____

g) If Mr. Muscat produces 500 bags of pastizzi, what is his Variable Cost?

_____

_____

h) Prepare a table with units produced (bags of pastizzi) from the 0-1000 at ranges of 100 each, and show the Fixed Cost, Variable Cost and Total Cost for each unit level of output.

Output	**Fixed Cost**	**Variable Cost**	**Total Cost**
Units	**€**	**€**	**€**
0			
100			
200			
300			
400			
500			
600			
700			
800			
900			
1,000			

i) Plot on Graph paper the Fixed Cost, the Variable Cost and the Total cost in relation to the level of output to show the change of cost as more units are produced.

Exercises Set D

1. Calculate the Total Cost for each level of output

Output (Units)	Fixed Cost (€)	Variable Cost (€)	Total Cost (€)
0	10	0	
10	10	5	
20	10	10	
30	10	15	

2. Fill in the missing figures in the table below

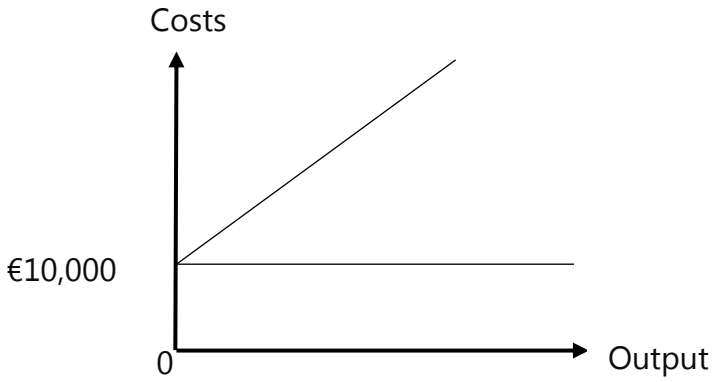
Output (Units)	Fixed Cost (€)	Variable Cost (€)	Total Cost (€)
0	100	0	
1		22	
2		44	
3		66	

3. Fill in the missing figures in the table below

Output (Units)	Total Cost (€)	Fixed Cost (€)	Variable Cost (€)
0	250		
1	350		
2	450		
3	550		
4	650		
5	750		

4. Answer the following questions

a. Which is the correct label for the upwards sloping line shown in the graph below?



b. Using examples, distinguish between fixed costs and variable costs.

5. Answer the following questions

(Adapted from SEC 2017 Paper 1 for LOs)

A small restaurant prepares lunch meals for its clients. The table below provides information about the firm's 'total costs' in relation to the number of meals prepared.

Output (Meals)	Total Cost (€)	Fixed Cost (€)	Variable Cost (€)
0	5		
1	9		
2	12		
3	16		
4	30		
5	45		
6	65		

Questions

a. Copy the above table and complete the data in the table to show the firm's fixed cost and variable cost.

b. In one diagram, plot the firm's Fixed Cost, Variable Cost, and Total Cost.

Section F – Average Costs

Learning Outcomes:

1. Define Average Total Cost (ATC), Average Variable Cost (AVC), and Average Fixed Cost (AFC).
2. Calculate ATC, AVC, and AFC.
3. Identify the shapes of the ATC, AVC, and AFC.
4. Illustrate curves (sketch, plot) depicting ATC, AVC, and AFC.

In economics, the term **Average** means '**per unit**'. So:

- **Average Fixed Cost** is the fixed cost per unit of output.

- **Average Variable Cost** is the variable cost per unit of output.

- **Average Total Cost** is the total cost per unit of output.

Sketches – ATC, AVC, and AFC

Exercises Set E

1. Read the following and answer the questions.

Francesca is the owner of a small firm that produces high-quality leather handbags. In one week, she produces **550 handbags**. Her costs for a week are as follows:

Fixed Costs	€2,200
Variable Costs	€3,300

Required

a. Calculate the Average Fixed Cost.

b. Calculate the Average Variable Cost.

c. Calculate the Average Total Cost.

_____

_____

_____

_____

_____

2. Read the following and answer the questions.

Carla's Bakery has fixed costs of €8,000 each month. The firm average variable costs are €3 per unit of output. The current level of demand at Carla's Bakery is 20,500 units per month.

Required

a. Calculate the monthly total costs of production at Carla's Bakery.

b. Calculate the current average costs each month for Carla's Bakery.

_____

_____

_____

_____

3. Calculate and Plot ATC, AFC, and AVC for each level of Output.

Output	Fixed Cost (€)	Variable Cost (€)	Total Cost (€)	Average Fixed Cost (€)	Average Variable Cost (€)	Average Total Cost (€)
0	30	0	30	/	/	/
1	30	10	40			
2	30	18	48			
3	30	22	52			
4	30	26	56			
5	30	34	64			
6	30	46	76			
7	30	61	91			
8	30	90	120			

4. Calculate and Plot ATC, AFC, and AVC for each level of Output.

Output	Fixed Cost (€)	Variable Cost (€)	Total Cost (€)	Average Fixed Cost (€)	Average Variable Cost (€)	Average Total Cost (€)
0	100	0	100	/	/	/
1	100		135			
2	100		156			
3	100		174			
4	100		200			
5	100		240			
6	100		300			
7	100		385			
8	100		496			

Interpretation of the Average Cost Curves

Part 1 - Technical Optimum Level of Output

The technical optimum level of output is that level of output where the firm has the lowest cost per unit that can be achieved. At this level of output, the cost to produce one unit is the lowest it can be. So, average total cost is at its _____.

At the technical optimum level of output, the firm has the most efficient combination of resources.

The Technical Optimum Level of Output

The shape of the average cost curve is u-shaped. It takes this form because at first, as more output is produced the firm faces increasing returns. However, there comes a point where the combination of resources leads to inefficiency and the firms faces decreasing returns. Graphically, decreasing returns set in right after the _____ _____.

Identify the technical optimum level of output for this firm

Output (Units)	Fixed Costs (€)	Variable Costs (€)	Total Costs (€)	Average Costs (€)
100	2,000	400		
200	2,000	760		
300	2,000	1,200		
400	2,000	2,320		

Part 2 – Analysis of AFC, AVC, and ATC

Average Fixed Cost is always decreasing because the _____

_____

_____

_____

The gap difference between Average Variable Cost and Average Total Cost is always narrowing because _____

_____

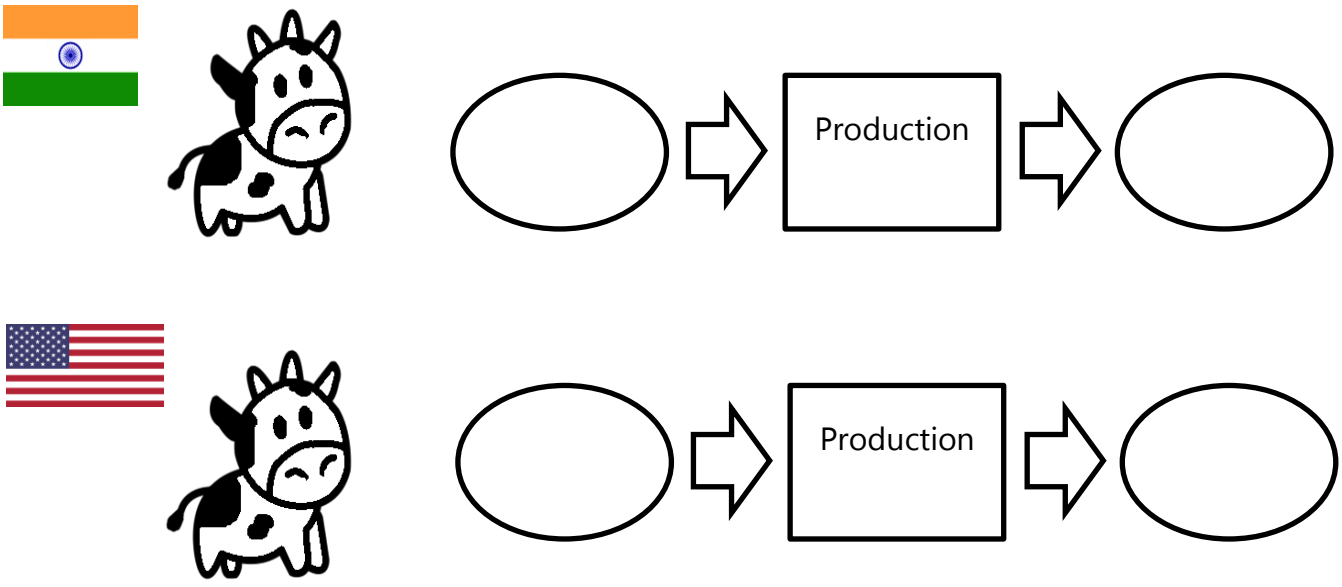
_____

Section G – Measuring Productivity

Learning Outcomes:

1. Define Total Product (TP), Average Product (AP), and Marginal Product (MP).
2. Calculate TP, AP, and MP.
3. Identify the shapes of AP and MP.
4. Illustrate curves (sketch, plot) depicting TP, AP, and MP.
5. Relate increases in output to increases in the employment of the factors of production in the short-run and in the long-run.
6. Relate the Division of Labour to the Law of Diminishing Returns.
7. Distinguish between short-run and long-run costs.

Cows and Milk – USA vs India



Productivity measures the amount of output that can be produced from a given amount of input, that is, how _____ resources are being used in the production process.

The aim of a business is to be efficient. To produce as much as much output _____ with the _____ resources possible at the _____ cost. Resources cost money, so _____ the productivity of resources will reduce production cost and _____ profit.

Fixed and Variable Factors of Production

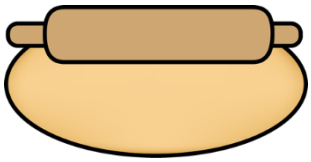
The factors of production are categorised into 2:

1. Variable factors of production
2. Fixed factors of production

The variable factors of production are those inputs in the production process whose quantity can be changed in the time period under consideration. For example: _____

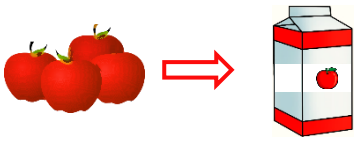
_____

_____



The fixed factors of production are those inputs whose quantity cannot be changed in the time period under consideration as they take time to be built/installed. For example:_____

_____



Short-Run and Long-Run

If a firm wishes to increase the amount of goods produced, it must employ more _____. Can I increase the amount of the following resources overnight?

Factor of production – Apple Juice Manufacturer	✓	×
Apples		
Sugar		
Water		
Workers		
Juicing Machine		
Factory Premises		
Delivery Vehicle		

In economics, we distinguish between two time periods:

1. Short-run
2. Long-run

Short-run – a time period where at least one of the factors of production is fixed. In this time period, to increase the production, _____

_____

Long-run – a time period where all the factors of production are variable.

Total Product, Average Product, and Marginal Product

Total Product – the total amount of goods and services produced by a firm's factors of production.

Average Product – the output produced per unit of variable factor (the most common factor of factor of production that is measured is labour). The average product measures the productivity of a worker, that is, how efficient a particular worker is.

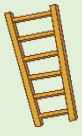
Marginal Product – the change in total product brought about by increasing the variable factor by one unit.

Measuring Productivity – Short-run (Law of Diminishing Returns)

Case Study – Walls and Ladders

Anthea is a self-employed painter and her job is to paint walls. Anthea only has one ladder that is suitable for the painting of walls, and to be able to obtain more she would need to wait for more than a month as the particular brand of ladders that she likes takes over 2 months to arrive from Australia by sea. She decided to hire more workers to help her paint more walls.

On normal working day, Anthea alone paints 5 walls. When Blake is added, together they manage to paint 15 walls. When Caleb is added they manage to paint 27 walls. When Drake is added they manage to paint 35 walls. When Emily is added they manage to paint 39 walls. The addition of Francesca still yields the same output of 39 walls. The addition of Gail yields only 35 painted walls.

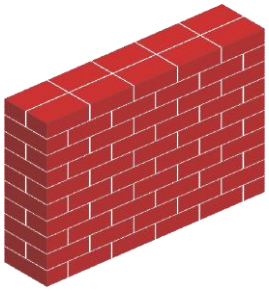


Required:

a) For each additional unit of labour calculate:
   i. Total product
   ii. Average product
   iii. Marginal product.

b) Plot the total product graph.

c) Plot the average product and the marginal product



Units of Labour	Total Product	Average Product	Marginal Product
	€	€	€

What do you notice?

The Law of Diminishing Marginal Returns

_____

_____

_____

_____

_____

_____

Things to note graphically:

1. What is happening when marginal product is 0? _____

   _____

2. What is happening when marginal product is negative? _____

   _____

3. What is happening when total product is at its maximum? _____

   _____

4. How many workers are employed when the marginal product is at its maximum? _____

   _____

5. At which point does marginal product decrease? _____

   _____

6. What happens when the 7th worker is employed? _____

   _____

Increasing Returns and Decreasing Returns

Increasing returns will occur when a firm increases its variable factor of production to a given fixed factor of production to a given fixed factor and as a result marginal product increases.

Decreasing returns will occur when a firm increases its variable factor of production to a given fixed factor and as a result marginal product falls.

Exercises Set F

1. Fill-in the table, plot AP and MP, and answer the questions

Units of Labour	Total Product	Average Product	Marginal Product
	€	€	€
0	0		
1	5		
2	12		
3	18		
4	23		
5	27		
6	30		
7	32		
8	32		
9	31		
10	29		

Answer the following questions:

a. How many units of labour must the firm employ to maximise total product?

b. What is the value of marginal product, when total product is at its maximum?

c. What happens to marginal Product when total product falls? Why?

2. Fill-in the table and plot TP, AP, and MP

Number of Workers	Total Product	Average Product	Marginal Product
0	0		
1	8		
2	24		
3	54		
4	82		
5	95		
6	100		
7	100		
8	96		

3. Calculate the Average Product and the Marginal Product for each level of output

Units of Variable Input	Total Product	Average Product	Marginal Product
0	0		
2	22		
4	52		
6	80		
8	98		
10	100		
12	100		
14	92		

4. Calculate the Average Product and the Marginal Product for each level of output

Units of Labour	Total Output	Average Product	Marginal Product
0	0		
5	20		
10	50		
20	100		
30	120		
35	119		
40	112		
47	90		

5. Calculate Total Output and Average Product for each unit of input

Inputs	Total Product	Average Product	Marginal Product
0			
1			3
2			6
3			7
4			2
5			0
6			-3

Measuring Productivity – Long-run (Returns to Scale)

Long-run – a time period where all the factors of production are variable. Thus, the firm increases output by bringing in more labour, more machines and more land. It should be noted that in the long run, the employment of more factors of production always increases output.

As a result, a firm in the long-run is said to have grown larger than it was before.

Returns to scale - compare the percentage increase in the output of the firm to the percentage increase in the size of the firm when the firm employs more of all the factors of production, i.e. more workers, more machines, more materials.

Units of land	Units of capital	Units of labour	Total output	% Increase in size of firm	% Increase in output
1	2	10	500	/	/
2	4	20	1,500	100.0	200.0
3	6	30	2,700	50.0	80.0
4	8	40	3,600	33.3	33.3
5	10	50	4,320	25.0	20.0
6	12	60	4,968	20.0	15.0

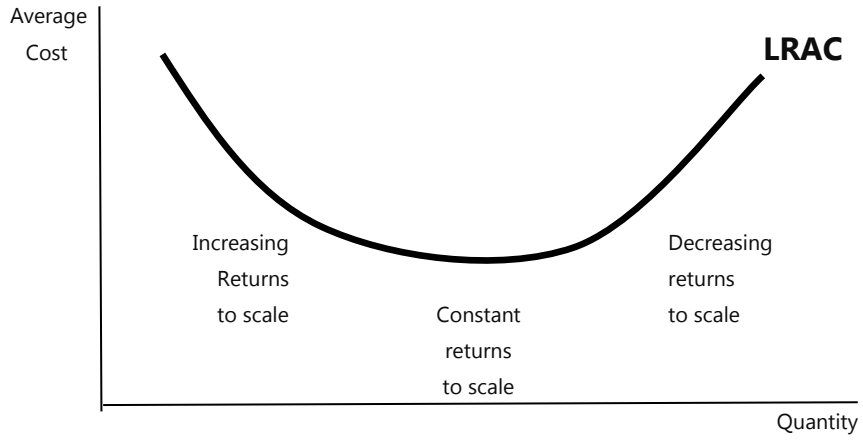
In the table above, a firm is increasing its output by employing more of all the factors of production. The percentage increases in the size of the firm give the same percentage whether you work with land, capital or labour.

Thus the increase from 1 to 2 or from 2 to 4 or from 10 to 20 all give an increase of 100%. The next increase is from 2 to 3 or 4 to 6 or 20 to30. This gives an increase of 50% and so on. The increase in output is worked out in the same way from one level to the next.

The results are tabulated in the last two columns of the table can be analysed as follows:

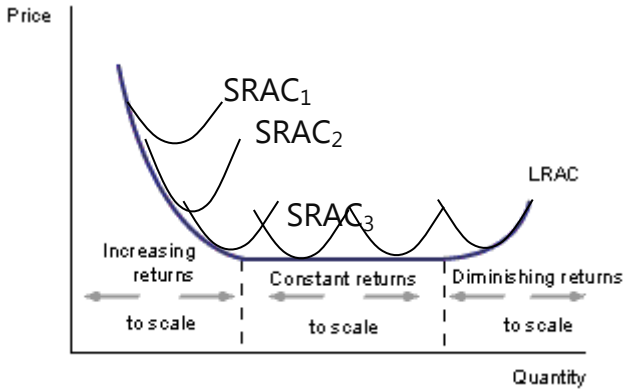
- At first, it may be seen that the *% increase in the size of the output is greater than the % increase in the size of the firm* (200>100 and 60>50). Here the firm is said to be getting **increasing returns to scale** or **internal economies of scale**.
- The next stage is when the *% increase in the size of the output is equal to the % increase in the size of the firm*. This is the stage where the firm is getting **constant returns to scale** or the stage where the firm has reached its **optimum size**.
- After that the *% increase in the size of the output is smaller than the % increase in the size of the firm* (20<25, 15<20). Here the firm is said to be getting **decreasing returns to scale** or **internal diseconomies of scale**.

This is shown in the graph below:



The Long Run occurs when a firm increases its output by increasing ALL its factors of production. It has already been shown above that returns to scale and, therefore, economies and diseconomies of scale, occur when the firm employs more of all the factors of production, i.e. more workers, more machines, more materials.

The relationship between Short-run Costs and Long-run Costs



The figure above shows the composition of the Long Run Average Cost Curve. $SRAC_1$ shows that the firm is employing one machine and $SRAC_1$ shows how the average cost changes when the firm employs more labour. $SRAC_2$ then shows how average cost varies in the short run when the firm now employs two machines and increases its employment of labour. This continues such that there is a series of SRACs each of which denotes some particular amount of the fixed factor.

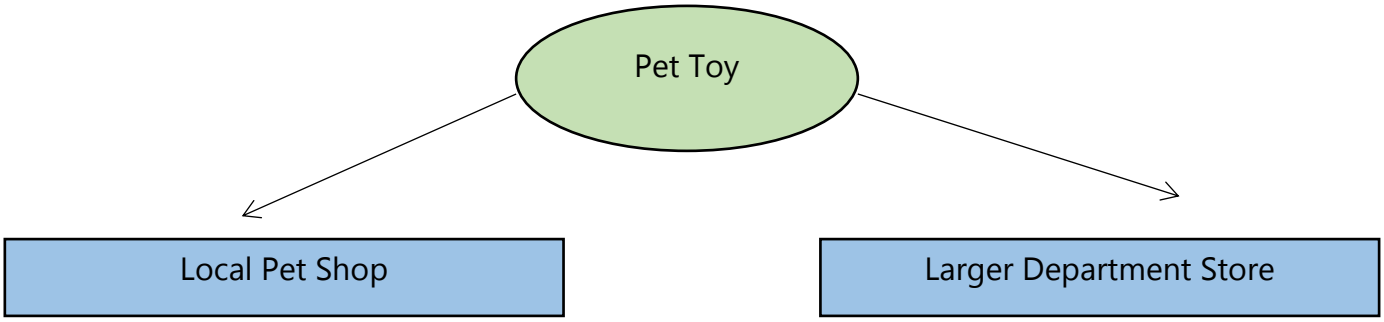
As may be seen, there is no SRAC that goes below the levels of the LRAC since the latter represents the lowest possible cost for those levels of output. The LRAC is thus called the envelope curve since it contains all SRACs such that no SRAC can be at any level below the LRAC. The firm is seen as going from one SRAC to another.

The firm first employs one machine and starts varying labour but keeping capital fixed when there is an increased demand for its product. This it can do, for example, by working overtime. At some point the firm will realise that it can produce the same level of output at a lower cost by moving down to the LRAC - by bringing in a second machine. Again, in the short run, when the firm wants to increase its output it will start moving along $SRAC_2$ until it again finds out that it can produce the same level of output at a lower cost and moves down to the LRAC by bringing in a third machine. By this process the firm is gaining **economies of scale** until it reaches the range of **constant returns to scale** . After the range of output where the firm gets constant returns, it will start facing an upward sloping LRAC, i.e. **diseconomies of scale** set in.

Section H – Internal Economies and Diseconomies of Scale

Learning Outcomes:

1. Compare and contrast internal economies and diseconomies of scale.

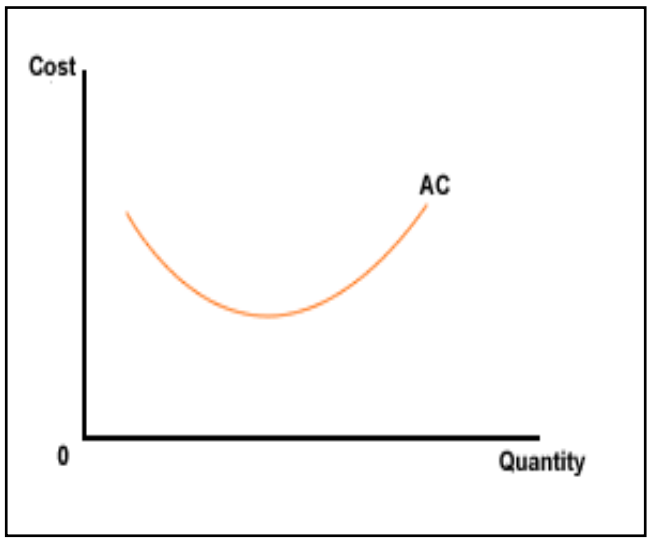


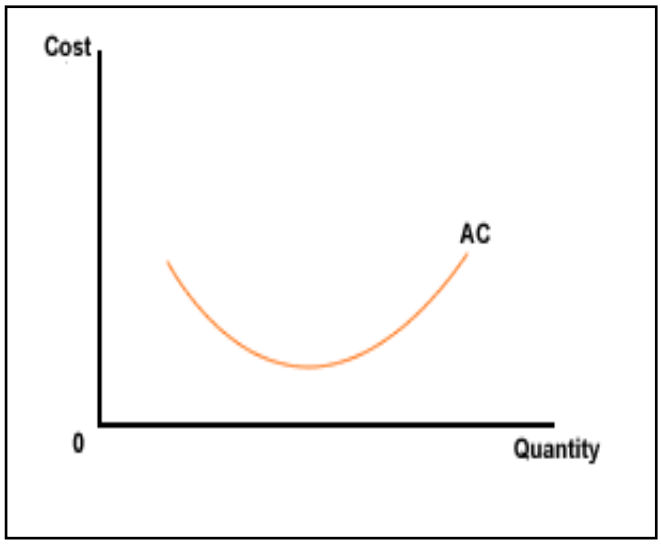
Price - €2.50

Profit - _____

Price - €2.00

Profit - _____





Case study- Would you expect all businesses in the same industry to have the same average costs?

Consider the average cost and total output of two businesses that produce bricks.

	Tilted Bricks	J Junction Brick Maker
Total output per year	25,000	2,000
Average cost per brick	50 cents	75 cents

What do you notice?

The bigger company has much _____ average costs than the smaller business. So, one can say that Titled Bricks has **cost advantages** over the J Junction Brick Maker.

Big businesses enjoy certain cost advantages just because they are large firms. In economics, these cost advantages enjoyed by large firms are known as:

Economies of Scale – factors that lead to a reduction in average cost as a business increases its size.

Internal economy of scale 1 – _____

Case Study – Mighty Paints Ltd

Mighty Paints Ltd is the biggest paint manufacturer within a country. The firm has decided to expand its range of colours and will be adding non-traditional paint colours to its range of products.

As a result, the firm is planning a big advertising campaign in order to launch its products and make this paint fashionable. The advertising campaign is expected to cost the firm €100,000. The firm is expecting to produce 1,000,000 buckets of paint per month. This advertising campaign will add _____ to the cost of producing each bucket of paint (average cost). A smaller firm that produces 200,000 buckets of paint a month will add _____ to the cost of producing each bucket of paint for undertaking the same advertising campaign.

A bucket of paint requires a lot of different chemicals. Given how large the quantity of buckets of paint produced, the firm is able to bulk-buy large quantities of chemicals from its suppliers. The firm buys 20,000,000 gallons of different chemicals from its suppliers at a cost of €55 per gallon. Smaller firms who only require 5,000,000 gallons per year will pay €75 per gallon.

What economies of scale is Mighty Paints Ltd benefitting from in this case study over other small firms?

1. _____
2. _____

Marketing economies are cost advantages that a large firm is able to enjoy over smaller firms because the larger firm can _____ its advertising costs over a larger number of output. The larger firm is also able to purchase its inputs in bulk at _____ prices. This _____ the cost of each item bought and gives the larger firm _____ over a smaller firm that buys in smaller quantities.

For each of the following case studies explain how each firm is experiencing marketing economies of scale

Example 1 – Oranges

Salty Supermarket is the biggest supermarket on an island. The supermarket buys its fruits and vegetables in bulk from local farmers in nearby fields. For examples, it is estimated that the supermarket buys 60,000 oranges every year at a discounted price of 60 cents per orange from a particular farmer. Other smaller shops and street fruit and vegetable vendors buy oranges in smaller quantities and as a result each orange costs them €1.

_____

_____

_____

Example 2 – Cuckoo Clocks

The cost to advertise weekly on the Sunday newspaper is €6,000 a year. Tucktoo Clocks and Harvey Clocks are two different firms that produce and advertise their cuckoo clocks on the newspaper. Tucktoo Clocks produces 6,000 cuckoo clocks a year, whereas Harvey Clocks produces 18,000 cuckoo clocks a year.

_____

_____

_____

Internal economy of scale 2 – _____

Case Study – Farooq Manufacturing

Farooq Manufacturing is the leading mattress manufacturer in a country. The company has decided to expand its production. The new machines are very expensive but can produce twice as many mattresses per hour than with existing machines.

A bank loan will be used to finance the expansion. Banks are willing to lend to the firm on very reasonable terms (for example - 5% rate of interest) compared to smaller firms because it owns many valuable assets that can be used as ***security*** against the loan. Smaller firms may find it difficult to obtain a loan that is necessary for the same project as they lack security.

If a small firm manages to obtain a loan, the rate of interest that is charged will be much higher than that of the larger firm (for example - 10% rate of interest) because of the higher risk associated with the lack of security by small firms.

What economies of scale is Farooq Manufacturing benefitting from in this case study over other small firms?

_____

_____

_____

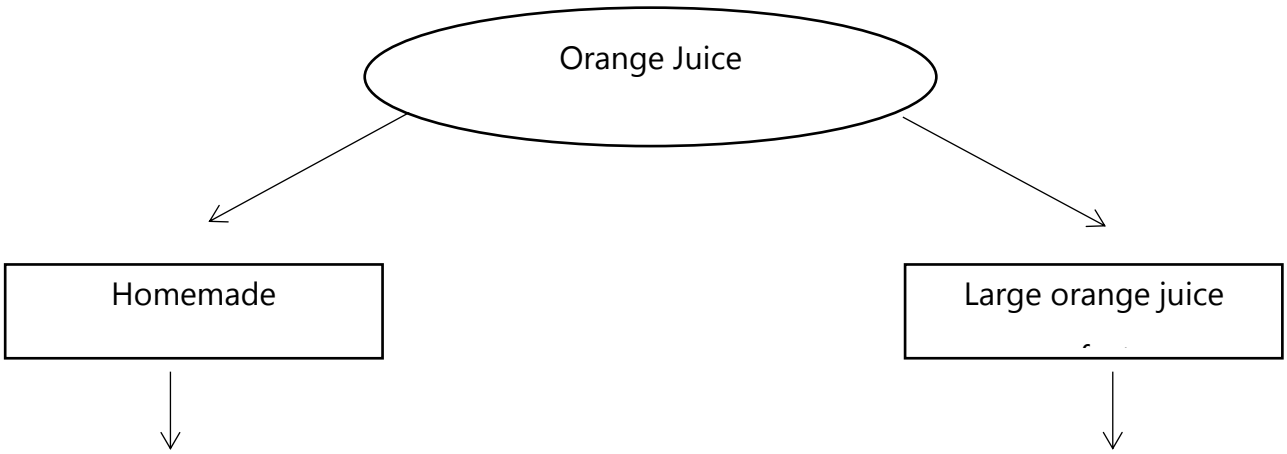
_____

_____

_____

_____

Internal economy of scale 3 –



Case Study – Froggy Bounce Ltd

Froggy Bounce Ltd is the global leading manufacturer of trampolines. Throughout its years of operation, the firm has accumulated a considerable amount of money with the aim of drastically expanding its scale of production. The firm is going to undertake an investment to modernize machinery. This would enable it to produce three times more than the current amount. The firm expects to cut down the cost per unit by a considerable amount.

As a result of the cost savings, the firm can buy a fleet of lorries that are able to carry much more trampolines than their current fleet of trucks without the need to employ more drivers.

What economies of scale is Froggy Bounce Ltd benefitting from in this case study over other small firms?

1. _____
2. _____
3. _____

Technical Economies are cost advantages that large firms enjoy due to their financial resources. Therefore, large firms can invest in their machinery and equipment to _____ of the scale of production. Furthermore, large firms can make use of _____ means of transport.

Generally, smaller firms lack these financial resources and as a result do not undertake such large investments in _____.

Internal economy of scale 4 – Risk-bearing Economies

Running a firm is a risky business. Large firms can try to overcome risks in a number of ways:

- Diversification – Diversification is the process of producing a variety of products to meet different consumer needs. A large firm may be able to offer a wider range of products than a smaller firm. For example: _____

  _____

  _____

  As a result, the large firm would not depend on one product for profit but would have multiple products. _____

  _____

  _____

Case Study – Paradise Pork

The citizens of country X have become very health conscious about the consumption of pork due to high concentration of fat within a piece of pork.

As a result of this, a large amount of people have stopped consuming pork. A lot of local pork farmers within the country have had to close down their farms as their business depended on selling the pork to local supermarkets. A large company like Paradise Pork Ltd who sells pork meat all over the world had to stop selling in country X, but it did not close down as it still has many other places to sell the meat.

- Operate overseas – A large firm may sell its products in many different countries (markets). Should the firm stop selling in one of its markets it will not have to close down as it will still sell products in the other markets.

Diseconomies of Scale

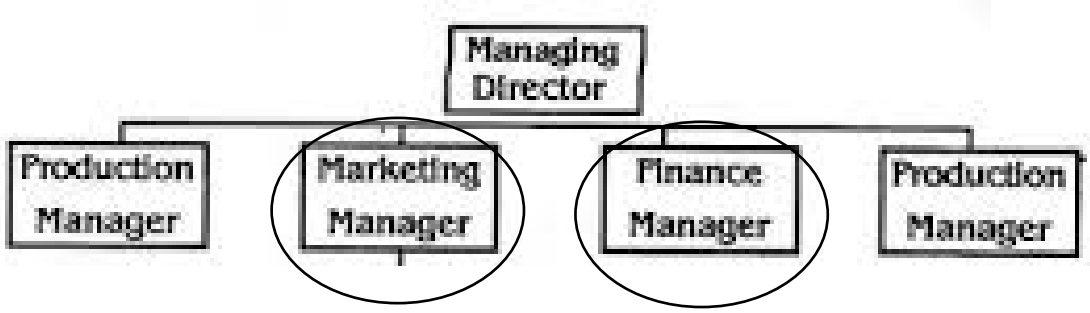
Diseconomies of scale occur when a business grows so large that its _____ rises. Many firms can experience costly problems if they grow too large. Sometimes a business can get too big!

Internal diseconomy of scale 1 – Management Diseconomies

A large firm can have thousands of employees and many different levels of management. This will cause a situation of _____ communication where there would be problems and disagreements between managers of different departments of the same firm.

Example:_____

_____



Internal diseconomy of scale 2 – Labour Diseconomies

A large firm may grow to employ thousands of employees. As a result, it becomes harder for top managers to stay in contact with all employees on a regular basis. Employees may have ideas and skills that may be overlooked or not valued by their managers; as a result, employees may become demotivated as they would feel that they are just a number within a firm.

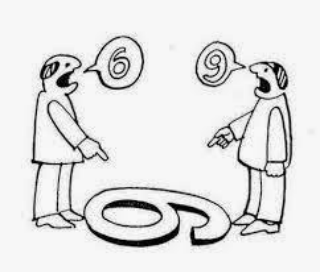
The demotivation of employees will affect both the quality and quantity of production. Disputes with employees can also bring production to a total halt if a strike is held by workers because they feel that they are not being treated fairly.

Case study – AwesomePlay Ltd

A year ago, AwesomePlay Ltd created an online game which has become very popular. As a result, the company had to grow into a large firm and it organised its operations into a number of departments. The current number of employees is 370 employees.

One of the problems that the company is facing is high employee turnover where a lot of employees are leaving the firm. The Human Resources department undertook an exercise to identify the reasons for this and the majority of employees have said that due to the growth of the firm, they feel like they are number within the firm and never get the praise they deserve for the work they are doing. Another finding from this research is that the employees are not giving their best and are spending a considerable amount of time procrastinating.

Also, there is currently a conflict going on between the accounting department and the programming department. The programmers would like to have a laptop paid for by the company to be able to carry out some work from home but the accounting department is arguing that this investment is unnecessary and too expensive.



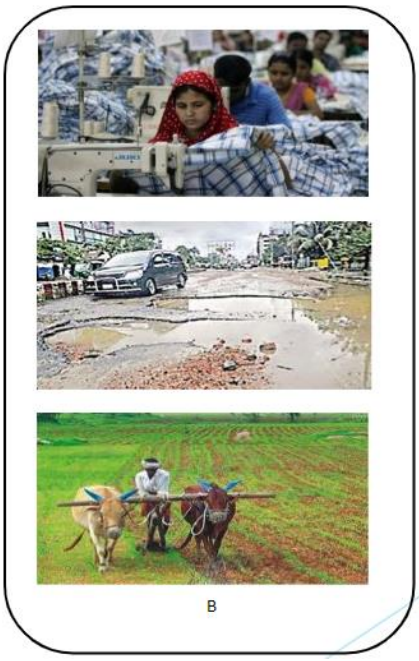
Identify the disadvantages of growth in this case study:

1. _____
2. _____

Section I – The World Trade Organisation

Learning Outcomes:

1. State a number of principles of 'fair trade' according to the World Fair Trade Organisation (WFTO).
2. Show that the lowering of costs should not come through the exploitation of cheap labour nor at the expense of fair trade.
3. Apply the principles of 'fair trade' to real-world situations.



Identify the difference between Picture Set A and Picture Set B

_____

_____

_____

_____

_____

_____

Fair Trade

Fair trade is a worldwide movement that aims to help farmers and producers in less-developed countries. The term *fair trade* means that producers receive a fair price for the goods that they produce. Goods that are produced and sold in support of these aims usually carry a fair-trade label. Many products, including coffee, sugar, tea, cotton, wine, and bananas are traded this way.

Farmers and workers in **less-developed economies** are often paid less for their goods and crops than those in **developed economies** which leads to situations of poverty. People involved in the fair-trade movement help the farmers deal with big companies that buy their produce to make sure that the farmers receive a fair income.

The people who promote fair trade help farmers and producers work in a sustainable way. This involves looking after the environment, using fewer chemicals, and planning for the future. They also help farmers and workers to form groups, called cooperatives. By working together, these cooperatives are able to demand better prices for their goods. People around the world, especially those in developed countries, participate in the movement by making an effort to buy goods that are traded fairly. Fair-trade products sometimes cost more to buy, but many people are prepared to pay the extra to support the movement and its principles.

Fair Trade is more than just trading:

- It is a vision of business and trade that put people and planet before profit
- It fights poverty, climate change, gender inequality and injustice
- It is a proof of concept that showcases the enterprise models of the new economy.

The Fair Trade Principles

The WFTO prescribes 10 Principles that Fair Trade Organisations must follow in their day-to-day work and carries out monitoring to ensure these principles are upheld. Some of these principles are:

- Principle 3 – Fair Trade Practices
- Principle 4 – Fair Payment
- Principle 5 - No Child Labour, No Forced Labour
- Principle 9 – Promote Fair Trade
- Principle 10 – Respect for the Environment

Principle 3 - Fair Trade Practices

The business is to operate with the mindset of ensuring wellbeing for the environment and for small producers where they must ensure that they do not make profit at their expense. This is done by trading with each other in a timely manner and payments are passed in full and within stipulated time frames.

Principle 4 - Fair Payment

A fair payment is one that has been mutually agreed by all. The agreement should be one which provides fair pay to the producers where they receive a fair and living wage. The payment should uphold principles of gender equality where no distinction is made between male or female producers. Both should receive a fair wage and a fair profit.

Principle 5 – No Child Labour, No Forced Labour

Organizations who buy Fair Trade products from producer groups ensure that no forced labor is used in production and the producer complies with international laws. Any involvement of children in the production of Fair-Trade products (including learning a traditional art or craft) is always disclosed and monitored to ensure the child's wellbeing is upheld.

Principle 9 – Promote Fair Trade

The business should raise awareness of the aim of Fair Trade and of the need for greater justice in world trade through Fair Trade. The organization provides its customers with information about itself, the products it markets, and the producer organizations or members that make or harvest the products.

Principle 10 – Respect for the Environment

Organisations which produce Fair Trade products maximize the use of raw materials from sustainably managed sources in their ranges, buying locally when possible. They use production technologies that seek to reduce energy consumption and where possible use renewable energy technologies that minimize greenhouse gas emissions. They seek to minimize the impact of their waste stream on the environment by using organic or low pesticide use production methods wherever possible. All organisations must use recycled or easily biodegradable materials for packing to the extent possible, and goods are dispatched by sea wherever possible.