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# Theory of Production

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# WHAT IS PRODUCTION?

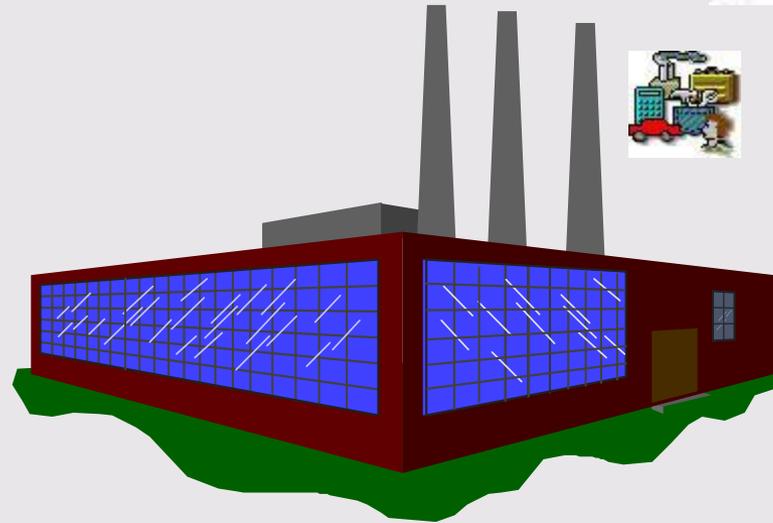
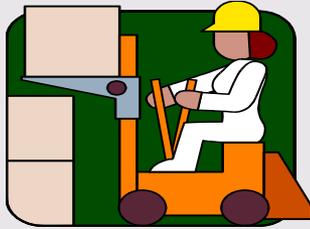
- Change of state
- Adding of utility
- It is an activity of transformation which connects factor inputs and output



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# Production



**Inputs/ raw materials**

**Production:  
The Firm**

**Outputs:  
Goods services**



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# Major Problems

- What to produce?
- For whom to produce?
- How to produce?



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You are going to start your own beverage industry. What are the decisions you need to take?





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# Continued

- How will you produce?
- What will be the time period?
- How much machinery and how much labor should you use in your new beverage plant?
- If you want to increase production, should you hire more labor, construct new plants, or both? Would You go on employing more factors to increase production?
- What should be your strategy?



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# Factors Of Production

- 1-Land
- 2-Labour
- 3-Capital
- 4-Organisation





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# Production Function

- A production function is a statement of the functional relationship between inputs and outputs.
- For simplicity it may be written as  $q=f(k,l)$



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# What will be your time period?





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# Short Run And Long Run

- The SR is a period of production during which some factors are fixed and some variable.
- The LR is a period where all inputs used to produce a product are variable.



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You have started your production. How much will you produce?





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# Basic Concepts

- The total product shows the maximum output that can be produced by the input with a given state of technology
- The marginal product is the change in output resulting from one unit change in one factor input keeping the other factor constant
- The average product of a factor of production is its total productivity divided by its quantity.



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How much machinery and how much labor should you use in your new beverage plant?





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<b>Units Of Labor</b>	<b>TP (Bottles)</b>	<b>MP</b>	<b>AP</b>
10	100	100	10
11	220	120	11
12	360	140	30
13	460	100	35.38
14	460	0	32.85
15	420	-40	28



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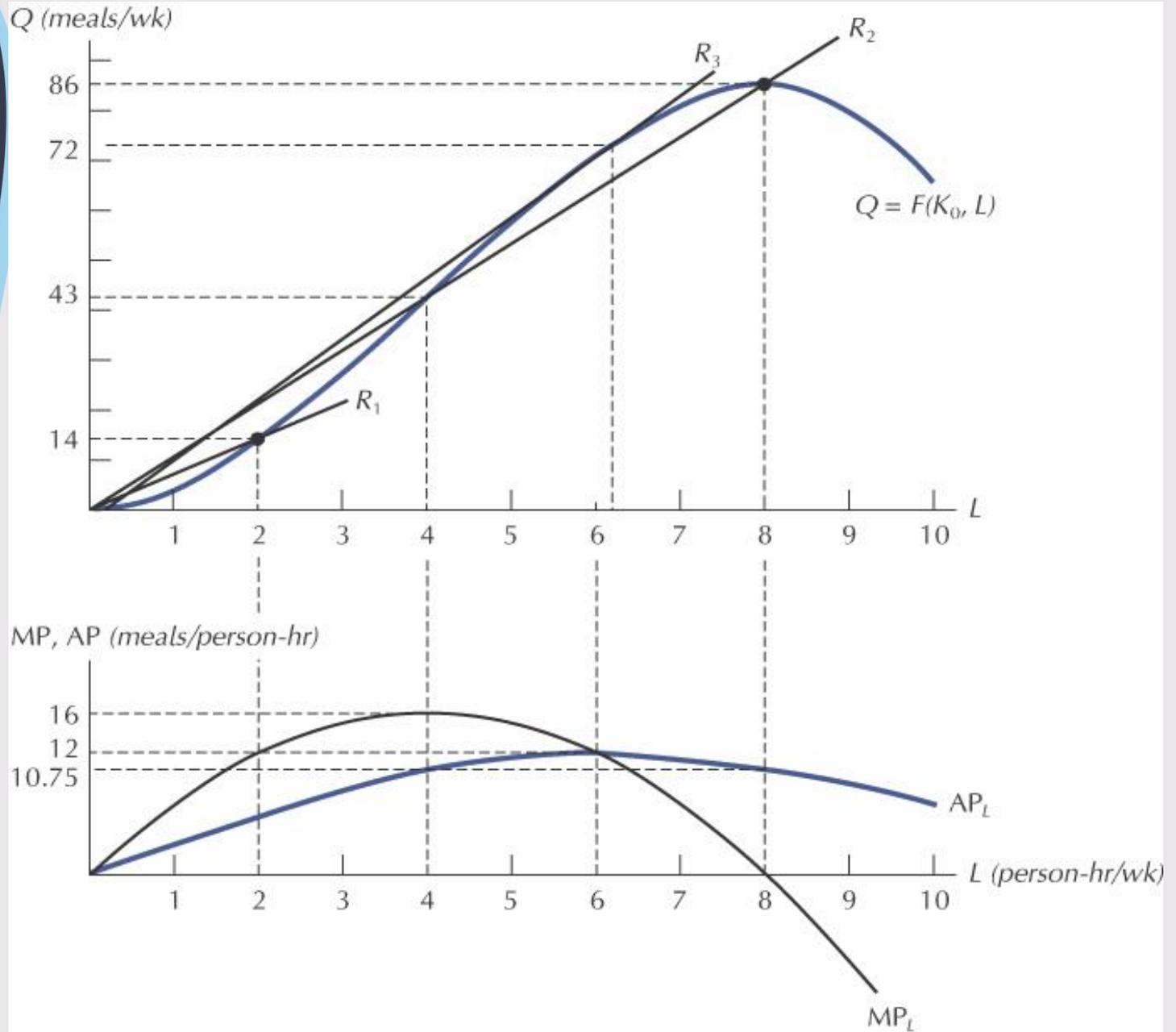
# The Law of Variable Proportion

With a given state of technology if the quantity of one factor input is increased, with other factors remaining fixed, total product will first increase but decrease after a certain point



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# Relation Between TP, MP, AP

- As labor increases TP increases at an increasing rate. Then MP, AP increases. But  $MP > AP$ .
- As labor increases TP increases at a decreasing rate then AP will be falling. MP is falling. But  $MP < AP$ .
- When TP falls downward  $MP < 0$



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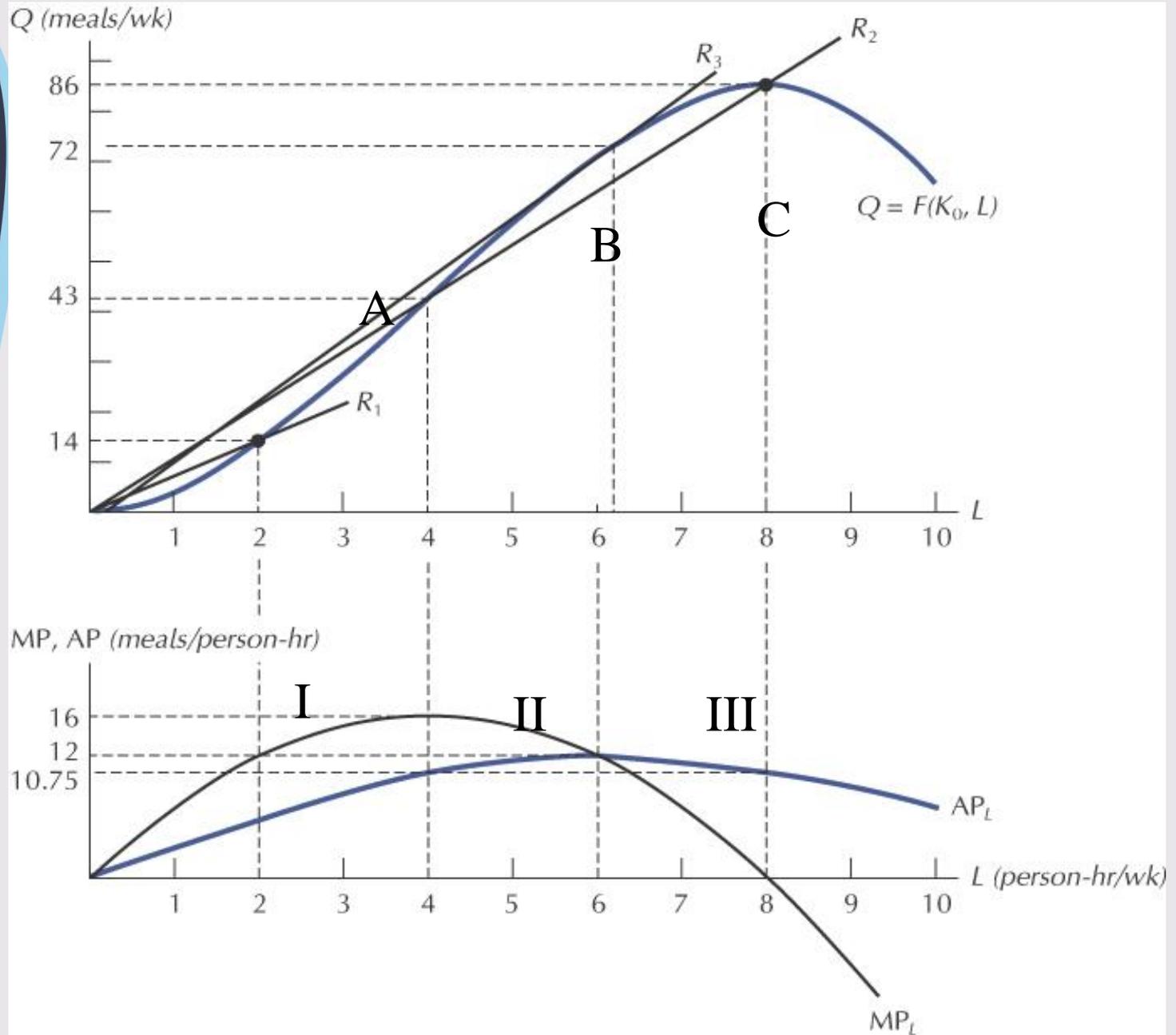
Would you go on employing more and more labor to increase total product?





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# Three Stages of Production

- **Stage-1** TP increases at an increasing rate.  $MP > 0$ . MP increases up to inflexion point and then decreases. AP increases. But  $MP > AP$
- **Stage-2** TP is increasing but a decreasing rate. MP is falling but it is positive.  $MP > 0$ . AP is falling.  $AP > MP$
- **Stage-3** TP is diminishing. MP is negative. It is called negative return.



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# Happy Learning

