DEBRECENI EGYETEM

PRACTICAL EXERCISES FOR THE COURSE "INTRODUCTION INTO ECONOMIC SCIENCE"

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A Debreceni Egyetem fejlesztése a felsőfokú oktatás minőségének és hozzáférhetőségének együttes javítása érdekében
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DEBRECENI EGYETEM

Content

Exercise 1

Purpose of the exercise: To make students able to understand the meaning of the demand curve.
Required knowledge: Demand curve shows willingness to pay.

Suppose that there are 8 people who want to rent an apartment. Their willingness to pay are given below.

Person	A	B	C	D	E	F	G	H
Willingness to pay	40	25	30	35	10	18	15	5

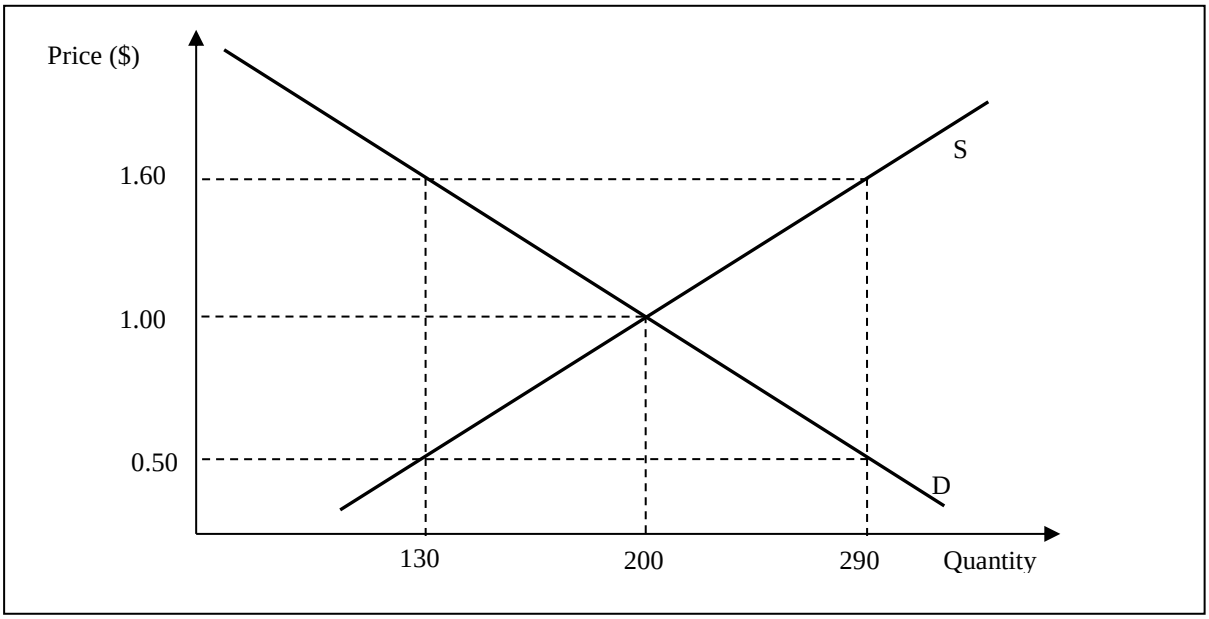
Suppose that there are five apartments which can be rented.
How much is the maximum equilibrium rent of an apartment on this market?

Sample solution
18

Exercise 2

Purpose of the exercise: To make students able to understand various market situations.
Required knowledge: In the market equilibrium demand equals supply.

Answer the following questions on the basis of this figure.



a) How much is the equilibrium price and the quantity in this market?

b) At which price would be a surplus of 160 units?

c) At which price would be a shortage of 160?

d) How much is the quantity supplied if the price is $1.60?

e) How much is the quantity demanded if the price is $0.50?

Sample solution:
a) $1.00 and 200
b) $1.60
c) $0.50
d) 290
e) 290

Exercise 3

Purpose of the exercise: To make students able to determine market equilibrium.
Required knowledge: In the market equilibrium demand equals supply.

The demand for books is: $Q_d = 120 - P$
The supply of books is: $Q_s = 5P$

a) What is the equilibrium price of books?

b) What is the equilibrium quantity of books sold?

c) How can you characterize the market if P = $15?

d) How can you characterize the market if P = $25?

Sample solution
a) In the equilibrium demand is equal to supply, which implies that 120 - P = 5P. After solving this equation we get P = $20.
b) Q = 100
c) If P = $15, the quantity demanded is equal to $Q_d = 120 – 15 = 105$. The quantity supplied is: $Q_s = 5x15 = 75$. $Q_d – Q_s = 30$, that is, there is a shortage equal to 30.
d) There is a surplus equal to 30.

Exercise 4

Purpose of the exercise: To make students able to determine market equilibrium.
Required knowledge: In the market equilibrium demand equals supply.

The demand for sunglasses is given by equation Qd = 1000 - 4P, where P denotes the market price. The supply of sunglasses is given by equation Qs = 100 + 6P.
Fill in the following table and find the equilibrium price.

P	80	90	100	110	120
Q_d					
Q_s					

Sample solution

P	80	90	100	110	120
Q_d	680	640	600	560	520
Q_s	580	640	700	760	820

Exercise 5

Purpose of the exercise: To make students able to understand the shifts of the demand and supply curves.
Required knowledge: Factors that shift the demand and supply curves.

In early 2008, the price of oil on the world market increased, hitting a peak of about $140 per barrel in July, 2008. In the second half of 2008, the price of oil declined, ending the year at just over U.S. $40 per barrel. Suppose that the global market for oil can be described by an upward-sloping supply curve and a downward-sloping demand curve. For each of the following scenarios, illustrate graphically how the exogenous event contributed to a rise or a decline in the price of oil in 2008:
a) A booming economy in China raised the global demand for oil to record levels in 2008.

b) As a result of the financial crisis of 2008, the United States and other developed economies plunged into a severe recession in the latter half of 2008.

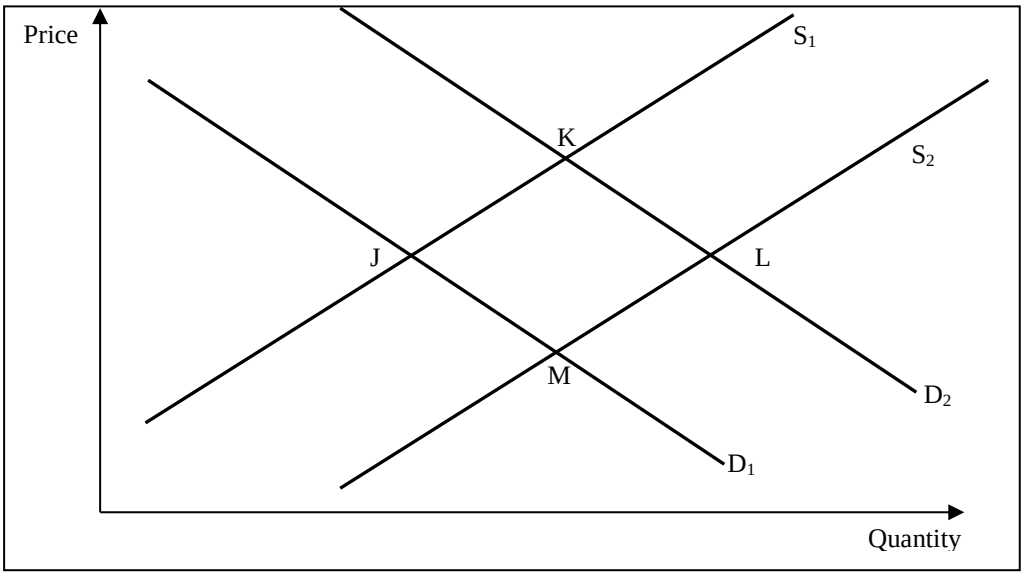
c) Reduced sectarian violence in Iraq in 2008 enabled Iraq to increase its oil production capacity.

Sample solution
a) Booming economy in China shifts the demand curve for oil rightward, contributing to an increase in the price of oil.
b) Recession in the U.S. and other developed economies shifts the demand curve for oil leftward, contributing to a decrease in the price of oil.
c) Increase in oil production capacity in Iraq shifts the supply for oil rightward, contributing to a decrease in the price of oil.

Exercise 6

Purpose of the exercise: To make students able to understand the shifts of the demand and supply curves.
Required knowledge: Factors that shift the demand and supply curves.

In the following figure S_1 and D_1 represent the original supply and demand curve, and S_2 and D_2 the shifted ones. Answer the following questions on the basis on the figure.



1. In this market
   a) supply has decreased and equilibrium price has increased.
   b) demand has increased and equilibrium price has decreased.
   c) demand has decreased and equilibrium price has decreased.
   d) demand has increased and equilibrium price has increased.
   e) supply has increased and equilibrium price has increased.

2. In this market
   a) the equilibrium position has shifted from M to K.
   b) an increase in demand has been more than offset by an increase in supply.
   c) the new equilibrium price and quantity are both greater than originality.
   d) point M shows the new equilibrium position.

3. In this market the indicated shift in supply may even have been caused by
   a) an increase in the wages paid to workers producing this good.
   b) the development of more efficient machinery for producing this commodity.
   c) this product becoming less fashionable.
   d) in increase in consumer incomes.

4. In this market the indicated shift in supply may even have been caused by
   a) a decline in the number of buyers in the market.

b) a decline in the price of a substitute good.
c) a decrease in incomes if the product is a normal good.
d) an increase in incomes if the product is an inferior good.
e) none of the above.

Sample solution
1. b)
2. b)
3. b)
4. e)

Exercise 7

Purpose of the exercise: To make students able to understand the shifts of the demand and supply curves.
Required knowledge: Factors that shift the demand and supply curves.

Suppose a new discovery in computer manufacturing has just made computer production cheaper. Also, the popularity and usefulness of computers continues to grow.
a) Use supply and demand analysis to predict how these shocks will affect equilibrium price and quantity of computers.

b) Is there enough information to determine if market prices will rise or fall?

c) Why?

Sample solution
b) The increase in demand due to the usefulness of computers will shift the demand curve to the right. This effect alone on the market will influence the market price and quantity to rise. The reduction in the cost of producing computers will result in an increase in supply (a rightward shift of the supply curve). This effect alone on the market will influence the price of computers to fall while the quantity will increase.
c) The supply and demand effects on price work in opposite directions. If the supply effect dominates the demand effect, the equilibrium prices will fall. On the other hand if the demand effect dominates, equilibrium prices will rise. As we don't know given the current information which effect dominates, we can't perfectly predict the change in price. The change in quantity is unambiguously increased.

Exercise 8

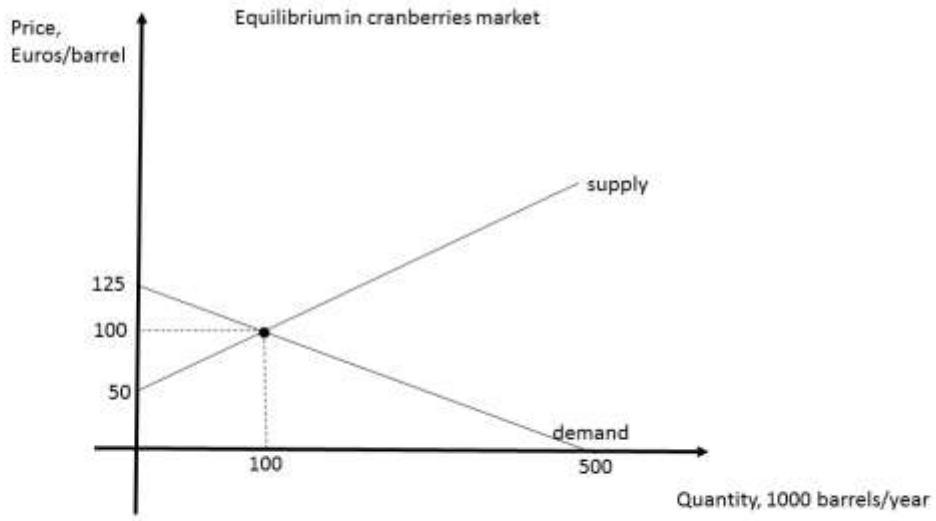
Purpose of the exercise: To make students able to determine market equilibrium.
Required knowledge: In the market equilibrium demand equals supply.

The demand and supply curves for cranberries are given by $Q^d = 500 - 4P$ (for $P \geq 50$) and $Q^{s =} - 100 + 2P$, where P is the price of cranberries expressed in euros per barrel and quantity is in thousands of barrels per year.

a) Plot the supply and demand curves on a graph and show where the equilibrium occurs.

b) Using algebra, determine the market equilibrium price and quantity of cranberries.

Sample solution
a)



b) Equating demand to supply, we have then that the equilibrium price and quantity will be:

$$500 - 4P = -100 + 2P$$
$$P = 100$$
$$Q = 100$$

as is shown in the graph of part (a).

Exercise 9

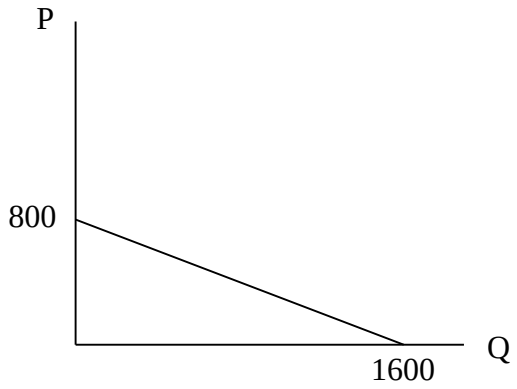
Purpose of the exercise: To make students able to determine market equilibrium.
Required knowledge: In the market equilibrium demand equals supply.

The demand for beer in Japan is given by the following equation: $Q^d = 700 - 2P - P_N + 0.1I$, where P is the price of beer, P_N is the price of nuts, and I is average consumer income.
a) What happens to the demand for beer when the price of nuts goes up? Are beer and nuts demand substitutes or demand complements?

b) What happens to the demand for beer when average consumer income rises?

c) Graph the demand curve for beer when $P_N = 100$ and $I = 10,000$.

Sample solution
a) When the price of nuts goes up, the beer quantity demanded falls for all levels of price (demand shifts left). Beer and nuts are complements.
b) When income rises, quantity demanded increases for all levels of price (demand shifts rightward).
c) $Q^d = 700 - 2P - 100 + 0.1*10,000 = 1,600 - 2P \Rightarrow P = 800 - 0.5\ Q^d$



Exercise 10

Purpose of the exercise: To make students able to understand elasticities of demand.
Required knowledge: The definition of elasticities of demand.

a) The price elasticity of gasoline supply in the U.S. is 0.4. If the price of gasoline rises by 8%, what is the expected change in the quantity of gasoline supplied in the U.S.?

b) For U.S. consumers, the income elasticity of demand for fruit juice is 1.1. If the economy enters a recession next year and consumer income declines by 2.5%, what is the expected change in the quantity of fruit juice demanded next year?

Sample solution
a) +3.2%
b) -2.75%

Exercise 11

Purpose of the exercise: To make students able to understand elasticities of demand.
Required knowledge: The definition of elasticities of demand.

The demand for packs of Pokemon cards is given by the equation $Q_d = 500{,}000 - 45{,}000P$.
a) At a price of $2.50 per pack, what is the quantity demanded?

b) At a price of $5.00 per pack, what is the quantity demanded?

c) Calculate the price elasticity of demand if the original price ($2.50) doubles?

Sample solution
a) 387,500 packs of cards
b) 275,000
c) The percentage change in price is (5-2.5)/2.5=1. The percentage change in quantity is (275,000-387,500)/387,500=-0.29. The price elasticity of demand is -0.29.

Exercise 12

Purpose of the exercise: To make students able to understand GDP figures
Required knowledge: Nominal GDP is the GDP measured at current prices while real GDP is measured at the prices of a certain base year.

a) Go to the Eurostat website: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_gdp&lang=en and check what is the GDP of the EU (or any country you choose) in 2017 (or the year you choose)? Is it nominal or real GDP? How do you know?
b) Calculate the percentage share of consumption, investment, government purchase and net exports. (To do that you have to change the "national accounts" indicator at the head of the table).
c) Compare real GDP (at 2010 prices) in a certain year with nominal GDP in the same year explain why they are different. Explain why the same figures for the year 2010 are *not* different.

Sample solution:

a) For example Hungary's GDP is reported to be 124,050.3 million euros "at current prices" in 2017, therefore it is nominal GDP.
b) Household and NPISH (non-profit institutions serving households) final consumption expenditure= 49.5 percent of GDP (=consumption)
Final consumption expenditure of the general government=20.2 (=government purchase)
Gross capital formation=22.7 (=investment)
Export of goods and services=88.2
Imports of goods and services=80.7
Net exports=88.2-80.7=7.5
c) Hungary's GDP as "chain-linked volumes (2010)" is reported to be 115,965.8 million euros in 2017, which means the real GDP at 2010 prices. The figures are not different for 2010 because 2010 is the base year here.

Exercise 13

Purpose of the exercise: Understanding the difference between real and nominal GDP, and different approaches to measuring inflation
Required knowledge: Calculation of real GDP means calculating the market value of all goods and services produced in a certain year for final use at the prices of a base year. GDP deflator is the ratio of nominal and real GDPs times 100, while consumer prices index describes the price of the consumer basket as the percentage of that in the base year. The yearly percentage change of the GDP deflator or that of the CPI is the inflation rate.

Suppose that in a small economy inhabited by 100 people only three goods are produced for final use: coffee, smartphones, and computers. Computers are bought only by firms to use them in the production of the other two goods. The table shows quantities that were produced of these goods, and the prices they were sold at in the 2010 and 2018.

year	price of coffee (€/cup)	quantity of coffee (cups)	price of a smartphone (€/piece)	quantity of smartphones (pieces)	price of computer (€/piece)	quantity of computers (pieces)
2010	1	10,000	200	100	1000	20
2018	1.2	11,000	200	120	900	25

a) Calculate nominal GDPs for both years.
b) Calculate the real GDPs for both years at 2010 prices and at 2018 prices, too.
c) Take 2010 as the base year and calculate the GDP deflators for both years. What is the inflation rate implied by the GDP deflators?
d) Suppose that the consumer basket includes 100 cups of coffee and 1 smartphone. Taking 2010 as the base year calculate the consumer price indices for both years. What is the inflation rate implied by the CPIs?
e) Compare the two inflation figures you have just calculated. Identify two reasons why the two figures are not equal.

Sample solution:
a) $NGDP_{2010}=1\times10{,}000+200\times100+1000\times20=50{,}000€$
b) $RGDP_{2018}$ at 2010 prices$=1\times11{,}000+200\times120+1000\times25=60{,}000€$
$RGDP_{2010}$ at 2018 prices$=1{,}2\times10{,}000+200\times100+900\times20=50{,}000€$
c) Base year: 2010
$GDPD_{2010}=100$
$GDPD_{2018}=(NGDP2018/RGDP2018)\times100=(59700/60000)\times100=99.5$
Therefore, the inflation rate between 2010 and 2018=-0.5 percent.
d) Base year=2010
$CPI_{2010}=100$
$CPI_{2018}=((1.2\times100+200\times1)/(1\times100+1\times200))\times100=106.67$
Therefore, the inflation rate between 2010 and 2018=6.67 percent.

Exercise 14

Purpose of the exercise: Using price indexes to compare purchasing powers
Required knowledge: To compare the purchasing power of different sums of money between two distant years, one has to use the prices indexes to deflate or inflate one of the figures to make it comparable with the other.

John D. Rockefeller is said to have been the richest person in the US about 100 years ago (1918). His personal wealth is estimated to have been $1.2 billion. How does this compare to the fortune of today's richest people?
Jeff Bezos' net worth is estimated to be $112 billion today (2017). Calculate this sum at 1918 prices knowing that the CPI was 15.06 in 1918 and 245.12 in 2017 (average 1982-1984=100).

Sample solution:
Bezos' net worth at 1918 prices = $112b/(245.12/15.06)=$6.881b, which is 5.7 times higher than the net worth of Rockefeller.

Exercise 15

Purpose of the exercise: Calculating GDP deflators
Required knowledge: GDP deflator is the ratio of nominal and real GDP, while the yearly inflation rate is the percentage change of the GDP deflator in the year in question.

a) Below you find a table with the Hungarian nominal and real GDPs (at 2005 prices). Calculate the GDP deflator by taking 2005 as the base year.
b) Calculate the yearly inflation rates by using the GDP deflators you have just calculated.
c) Compare these figures with the inflation figures that are calculated form the CPI and are also given in the table. Are they the same? Why (not)?

year	**nominal GDP**	**real GDP** (at 2005 prices)	**inflation rate** (from CPI)
2000	13 350 074	18 258 901	9.8
2001	15 419 134	18 960 136	9.2
2002	17 461 700	19 818 690	5.3
2003	19 138 918	20 581 436	4.7
2004	21 099 068	21 611 520	6.8
2005	22 559 880	22 559 880	3.6
2006	24 256 957	23 428 700	3.9
2007	25 680 214	23 527 662	8.0
2008	27 193 630	23 727 958	6.1
2009	26 424 604	22 161 677	4.2
2010	27 224 599	22 306 901	4.9
2011	28 304 938	22 676 673	3.9
2012	28 781 064	22 306 725	5.7
2013	30 248 235	22 773 748	1.7
2014	32 583 424	23 735 860	-0.2
2015	34 378 594	24 575 261	-0.1
2016	35 474 186	25 135 773	0.4
2017	38 355 115	26 175 656	2.4

Sample solution:
See the solution of Exercise 2.

Exercise 16

Purpose of the exercise: Getting insights into economic growth figures
Required knowledge: If the growth rate of a country is g×100 percent for T years, then starting with Y_0 GDP per capita in year 0, the GDP per capita in year T will be: $Y_T=Y_0(1+g)^T$

a) Real GDP per capita in South Korea was $4,879 in 1980 and $35,104 in 2014. Calculate the average yearly growth rate between these two years. Is this growth rate typically high or low as compared to the growth rate of a rich country?
b) Suppose that a country has now a per capita GDP of $5,000 while another one has a per capita GDP of $30,000. Calculate the average growth rate that the poor country needs to have in order to catch up with the rich one in 40 years, provided that the rich country's income is growing at a rate of 2 percent per year.
c) Today's rich countries has a per capita income of about $40,000. How many years ago could a 2-percent economic growth have started, provided that per capita GDP cannot be lower than $700?

Sample solution:
c) $5{,}000\times(1+g)^{40}=30{,}000\times(1+0.02)^{40}$
$g=6^{1/40}\times1.02-1=0.0458$, that is, the average yearly growth rate should be 4.58 percent.

Exercise 17

Purpose of the exercise: Practising the calculation of some figures that describe the labour market
Required knowledge: Understanding of the basics of labour statistics: the labour force is made up by the employed and the unemployed while the rest of the population between 15 and 64 is 'not in the labour force'. The unemployment rate shows the percentage of the unemployed within the labour force, while the participation rate is given by the percentage of the labour force within the whole population in question.

Suppose that in an economy the population between the age of 15 and 64 is 8 million. Of these 8 million people 300,000 are unemployed and 4 million are employed.

a) Calculate the number of those people who are not in the labour force.
b) Calculate the participation rate.
c) Calculate the unemployment rate.
d) Suppose that 1 million people of those not in the labour force before start looking for job and 500,000 of them find one while the other 500,000 keep looking for a one. What is the unemployment rate now? Do you consider this change as good or bad? Explain why.

Sample solution:

c) The unemployment rate =((no. of unemployed)/(no. of those in the labour force))×100 = =(300,000/(4000,000+300,000))×100=6.98 percent.

Exercise 18

Purpose of the exercise: Understanding the basics of labour market
Required knowledge: Demand and supply on the market for labour. The equilibrium real wage is the one at which the quantity of labour demanded equals the quantity of labour supplied. A minimum wage set above the equilibrium wage will result in unemployment with employment determined by the quantity demanded.

On a labour market the demand curve can be described as $D(w)=32000/w^2$, where w denotes the real wage. The labour supply is 8000 and independent of the real wage.

a) Calculate the equilibrium (market clearing) real wage. Calculate the unemployment rate.
b) Suppose that a minimum wage of 2.1 is introduced by the government. Calculate employment and the unemployment rate after the minimum wage is introduced.

Sample solution:

b) Employment: $D(2.1)=32000/2.12=7256.236$
The unemployment rate$=((8000-7256.236)/8000)\times100=9.297$

Exercise 19

Purpose of the exercise: Understanding the functions of money
Required knowledge: There are three functions of money: medium of exchange, unit of account, store of value. Different assets can fulfil any of these functions to a different extent.

Explain which functions of money, if any, the following things fulfil.
a) A euro banknote in Hungary.
b) A euro bank account in Hungary.
c) A season ticket for public transport.
d) A treasury bond.
e) Gold
f) A bottle of high-quality wine.

Sample solution:
b) A euro bank account is almost as good as a HUF bank account because it is easy to pay with euro account although it involves an additional transaction in which the buyer sells euros for forints. This makes euro payments somewhat more costly than forint payments. The same is true for the unit of account function. As a store of value, however, the euro is usually better because of its lower inflation.

Exercise 20

Purpose of the exercise: Understanding the basics of money creation
Required knowledge: Most of the money supply is created by the banking system through making loans because checking accounts fulfils all functions of money. The reserves is only a fraction of all the deposits. In a simplified T-account in a bank one can find only deposits on the liabilities side, and only reserves and loans on the assets side.

a) Draw the simplified balance sheet of a bank that has 1000 million euros on reserve in cash that had been deposited at it before, and does not loan out any of it.
b) Suppose that the bank decides to loan out 800 million in cash. Draw the new balance sheet. Has the bank created any money?
c) Suppose that the bank loans out 800 million euros by increasing the deposits of their own depositors. Has the bank created any money? If so, how much?
d) Suppose that the depositors of the bank then decide to redeem these new deposits of theirs into cash. Draw the new balance sheets. How much money, if any, has been created in this case?

Sample solution
b)

Assets	Liabilities
Reserves: €200m Loans: €800m	Deposits: €1000m
€1000	€1000

The bank has not created money because the sum of deposits has not increased by this transaction.
c)

Assets	Liabilities
Reserves: €1000m Loans: €800m	Deposits: €1800m
€1800	€1800

The bank has created €800 additional money because the sum of deposits has increased this much by the transaction.

Exercise 21

Purpose of the exercise: To understand the most important steps in the history of the European Union.
Required knowledge: The European Union has been formed by several Treaties during the last decades. As a result of this process nowadays the European Union is a unique partnership of 28 countries.

The European Union is not a state, but a unique partnership between European countries, known as Member States. Together they cover a very important part of the European continent. Who is the member of the EU? The EU is currently consist of 28 countries. Please fill in the blank lines in the table.

Year	Name of the Treaty	New EU Member States
1952	**The European Coal and Steel Community**	
1958		**----------**
1973	**----------**	
	----------	**Greece**
1986	**----------**	
1993		**----------**
1995	**----------**	**Austria, Finland, Sweden**
	Treaty of Amsterdam	**----------**
2003		**----------**
2004	**----------**	
	----------	**Bulgaria, Romania**
	Treaty of Lisbon	**----------**
	----------	**Croatia**

Sample solution
1952 – Italy, France, Nederland, Luxembourg, Deutschland, Belgium
1958 – The treaties of Rome: The European Economic Community, The European Atomic Energy Community (EURATOM)
1973 – Denmark, United Kingdom, Ireland
1981 – Greece
1986 – Portugal, Spain
1993 – Treaty on European Union - Maastricht
2001 – Treaty of Amsterdam
2003 – Treaty of Nice
2004 – Cyprus, Czech Republic, Estonia, Poland, Latvia, Lithuania, Hungary, Malta Slovakia, Slovenia
2007 – Bulgaria, Romania
2009 – Treaty of Lisbon
2013 – Croatia

Exercise 22

Purpose of the exercise: To understand the importance of integration.
Required knowledge: The international integration can create values for independent states and economies but on the other hand it causes loss of the identity.

The international integration is created as a voluntary, complex, economic and political merger of sovereign states or economies. It is important to underline the volunteering because the integration causes the partial melting of the nation and the economy with partial loss of the identity. Different forms of the integration known worldwide which we can classify by several aspects (e. g. institutional, geographical).
Please list the different forms of the international integration. Please also compare and typify these forms briefly.

1. 2.

3. 4.

5. 6.

7.

Sample solution

1. Preferential trading area
2. Free trade area
3. Customs union
4. Common market
5. Economic union
6. Economic and monetary union
7. Complete economic integration (Political union)

Exercise 23

The purpose of the exercise: To understand the importance of the Treaties of the European Community and the importance of the EU Law.
Required knowledge: The Treaties used to form the operation and the system of the European Union and a very important part of the EU Law is legislated by the competent EU institutions by the appropriate processes.

The European Union is based on a chain of treaties from the Paris and Rome Treaties signed in the 1950s through the Maastricht and Amsterdam Treaties signed in the 1990s till the Nice Treaty. The listed treaties generated a continuous progression over the last 50 years. By these treaties the member states partially assigned their national sovereignty to common institutions representing not only the national but the common interests as well. As a speciality, the legislation and executive powers are shared in the European Community between the European Commission and the European Council while the role of the European Parliament becomes more and more important. Nowadays the European Parliament have legislative and codecision functions. That was a lot of institutional background to take in! However, it is important to understand what the so-called Brussels actually is and who is responsible for what in the EU. Take the test below to see how much you remember. Put a cross in the box against the institution(s) that match(es) the description.

Who …?	**European Parliament**	**European Council**	**Council of the EU**	**European Commission**	**European Court of Justice**
1.Makes proposals for EU laws					
2.Approves EU laws					
3.Consists of (only) one representative/ member per EU country					
4.Is elected by EU citizens					
5.Executes the budget					
6.Represents the interests of citizens					
7.Represents the interests of EU countries/their governments					
8.Decides on the interpretation of EU laws					
9.Defines the general political direction of the EU					

Source: europa.eu

Sample solution
European Parliament: 2, 4, 6
European Council: 3, 7, 9
Council of the European Union: 2, 3, 7
European Commission: 1, 3, 5
European Court of Justice: 3, 8

Exercise 24

The purpose of the exercise: To understand the importance of the monetary union.
Required knowledge: the most developed form of the economic integration is the introduction of the common currency which has been realised in the EMU.

The most developed form and an important criteria of the economic integration is the introduction of the common currency. This way the economic union becomes a monetary union. The first step of the creation of the EMU was the shift from the national currencies to the common currency (the Euro) on the 1st January 1999. Later between 1st January 2002 and 28th February 2002 the introduction of the Euro banknotes and coins to the cash flow has been completed. Based on the fulfilment of the convergence criteria and on different political decisions in the first round 12 member states joined the EMU. Nowadays 19 countries out of 28 EU member states are members of the Euro-zone. Which countries are the members of the euro area? Tick the 19 that are in the 'euro area' and use the euro as their currency.

○ Austria	○ Denmark	○ Hungary	○ Malta	○ Slovenia
○ Belgium	○ Estonia	○ Ireland	○ Netherlands	○ Spain
○ Bulgaria	○ Finland	○ Italy	○ Poland	○ Sweden
○ Croatia	○ France	○ Latvia	○ Portugal	○ United Kingdom
○ Cyprus	○ Germany	○ Lithuania	○ Romania	○ Czech Republic
○ Greece	○ Luxembourg	○ Slovakia		

Source: europa.eu

Sample solution
Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherland, Portugal, Slovakia, Slovenia, Spain

Exercise 25

Purpose of the exercise: To understand the importance of the Common Agricultural Policy.
Required knowledge: The Common Agricultural Policy is one of the most important policy of the European Union responsible for the agricultural production and for the food supply of the European Citizens.

The Common Agricultural Policy (CAP) was "born" almost 60 years ago: in 1962. This policy which – without any overstatement – can be mentioned as a cornerstone of the European integration is responsible for the safe food supply of the citizens of the European Union and for the improvement of the agricultural competitiveness and viability of the rural areas. The CAP is the only policy which is mostly financed by the European Union and not by the national budgets in all the Member States. The CAP contributed in the continuous progression of the economic performance and the productivity, the commercial expansion and the decrease of the amount spent on food by households in the last decades by the opinion of the European Committee.
Please expound the most important reforms of the CAP support policy in the 1962-2014 period! Please describe the different forms of subsidies briefly!

Sample solution
In 1962, the EU's common agricultural policy (CAP) became a partnership between agriculture and society, and between Europe and its farmers.
In 1992, the 'MacSharry reforms' were created to limit rising production, while at the same time adjusting to the trend toward a more free agricultural market. The reforms reduced the levels of the support by 29% for cereals and 16% for beef. They also created 'set-aside' payments to withdraw land from production, payments to limit stocking levels, and introduced measures to encourage retirement and afforestation.
In 1999, the 'Agenda 2000' reforms divided the CAP into two 'Pillars': market support and rural development.
In 2003, the 'Fishler reforms' – EU farm ministers adopted a fundamental reform of the CAP, based on "decoupling" subsidies from particular crops. (Member states may choose to maintain a limited amount of specific subsidy.) The new "single farm payments" are subject to "cross-compliance" conditions relating to environmental, food safety and animal welfare standards. Many of them were already either good practice recommendations or separate legal requirements regulating farm activities. The aim is to make more money available for environmental quality or animal welfare programmes.
In 2009, The Health Check of the CAP aims at helping farmers better respond to market signals and face new challenges.

Exercise 26

Purpose of the exercise: To understand the price "scissor" (difference) of industrial-agricultural products.
Required knowledge: Basic understanding of the price indicies.

The price "scissor" is the ratio of the farm producer price index and the price index of agricultural inputs. It is a common way to say that the price "scissor" has opened, meaning that the price differences has increased, thus the growth of the input prices were greater than the growth of the producer prices.
Farm Producer Price Index: Changes in prices paid to farmers for resale or processing for sale and for agricultural products sold directly to the public (market), as compared to average prices in the previous year (or 2010).
Price index of agricultural inputs: Price changes of industrial and purchased agricultural products (e.g. seed, fodder) used for current production, as well as the price changes of various non-agricultural services and assets invested.
Please calculate the value of the price "scissor" and analyse the results!

Farm Producer Price Index:
2015 – 175.2
2016 – 168.6
2017 – 178.0

Price index of agricultural inputs:
2015 – 210.1
2016 – 205.9
2017 – 205.9

Sample solution:
2015 – 83.3
2016 – 81.8
2017 – 86.4

Exercise 27

Purpose of the exercise: to understand the importance of the Standard Gross Margin and the Standard Output
Required knowledge: the competitive analysis of the different parts of the agriculture is important during the designation of the different supports and to give an overview on the agricultural production.

The production value contains the sales, the industrial use, the industrial consumption, the revenues due to changes in stock (both main and side products). It does not contain the value of the manure in animal husbandry, but does contain every type of product-, area- or herd related subsidies. In both cases, to compare the standard values, one has to include the 12 months of production period. In those cases, when the production period is shorter than 12 months (e. g. in case of the pig breeding), it has to be extended to 12 months. In those cases, when the production period is longer than 12 months (in case of animal husbandry and meat production, for example beef production), then the Standard Gross Margin (SGM) and Standard Output (SO) values should be calculated for the 12 months period. The SGM and the SO should be determined for one hectare in case of plant production (or 100 m^2 in case of mushrooms) and for one year average animal unit in the case of animal husbandry (100 head of animals for poultry, 1 family for bee). The most important similarities and differences are listed in the following table:

Standard Gross Margin (SGM)	**Standard Output (SO)**
Measures the contributions of the different activities to the overall revenue.	The average monetary value of the agricultural output at farm-gate price, in euro per hectare or per head of livestock
SGM= Value of production – direct variable cost	SO = Value of production – direct supports
It contains the direct subsidies.	It does not contain any kind of direct or indirect subsidies.
The economic size are interpreted in European Size Unit (ESU).	The economic size are interpreted in euro directly.
The determination the type of farming does not take the other income generating activities into account.	The determination the type of farming does take the other income generating activities into account (machinery work, food processing).

Product	**Unit**	**Standard Output (SO) (HUF)**
Wheat	ha	179 522
Barley	ha	148 402
Maize	ha	240 718
Sunflower	ha	213 874
Soy	ha	206 060
Pasture	ha	26 480
Dairy cow	piece	545 184
Sheep	piece	19 922
Sows over 50 kg	piece	144 232
Laying hens	100 pieces	521 554

Calculate the size of EUME farms based on the following data.

1. Individual farm, 3 ha barley, 1.2 ha sunflower, 1 ha pasture
2. Individual farm, 5 ha wheat, 2 ha maize and 2 dairy cows
3. Individual farm, 20 sheep, 10 sows
4. Individual farm, 150 laying hens

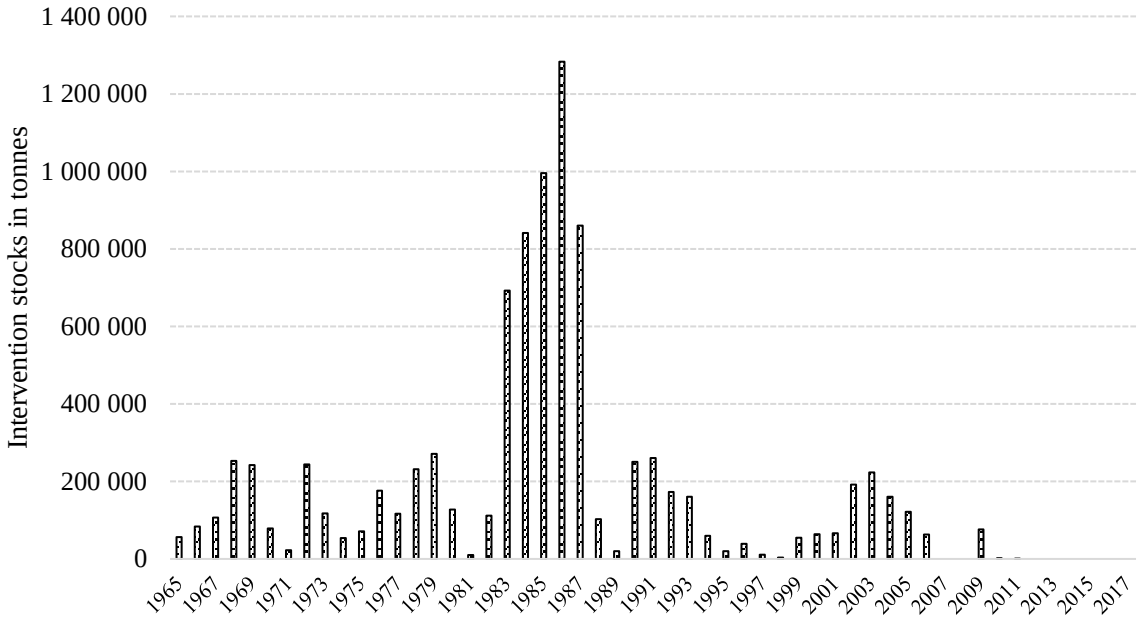
Sample solution

1. 3 ha x 148 402 = 445 206 HUF + 1.2 ha x 213 874 = 256 648,8 HUF + 1 ha x 26 480 = 26 480 HUF = 728 334,8 HUF
2. 5 ha x 179 522 = 897 610 HUF + 2 ha x 240 718 = 481 436 HUF + 2 pieces x 545 184 = 1 924 230 HUF
3. 20 pieces x 19 922 = 398 440 HUF + 10 pieces x 144 232 =1 840 760 HUF
4. 150 pieces x 521 554 = 782 331 HUF

Exercise 28

Purpose of the exercise: To understand how the CAP market tools are related to the supply-demand conditions of the market.
Required knowledge: To recognise that when there is over-supply on the market, price will fall.

On the graph, you can see the butter intervention stocks between 1960 and 2017. Agricultural prices for butter (or other storable commodities) in some cases fall below a certain level due to market surplus. In these times, the public authorities of the member states may intervene to stabilise the market and normalise the prices by purchasing surplus supplies. Describe the trends in the intervention buying based on the graph! How did these market events affect the agricultural prices? What could be the historical reason behind the market developments after 1960?



Source: https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/factsheets/pdf/eu_en.pdf
https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf

Sample solution:
Historical stock levels were the highest before 1990, especially during the 1980s. The reason behind this that after the World War II, the primary market policy of the CAP was to ensure sufficient amount of food at a reasonable price. This aim was established by price guarantees for example, which quickly led to over production. To normalise the market prices, intervention stock levels were very high which was very costly to the EU. In recent years, the EU aims at a more market oriented policy, where internal market prices are more likely to be determined by the international market prices. The market environment is more competitive and incentives to over production were removed after 1992.

Exercise 29

Purpose of the exercise: To understand the share of employment among the sectors of the economy.
Required knowledge: Tertiary sector in generally, has the highest share.

The table shows the share of the employment among the three national sectors. What is the relationship for the given Member States?

	Primary sector	**Secondary sector**	**Tertiary sector**
Germany	1,4	24,2	74,4
Denmark	2,4	17,2	80,5
France	2,7	16,9	80,4
Italy	3,7	22,9	73,4
Hungary	5,9	26,0	68,1
Netherlands	2,2	14,5	83,3
Poland	10,6	31,0	58,5
Romania	24,0	29,7	46,3
EU-28	4,5	21,7	73,9

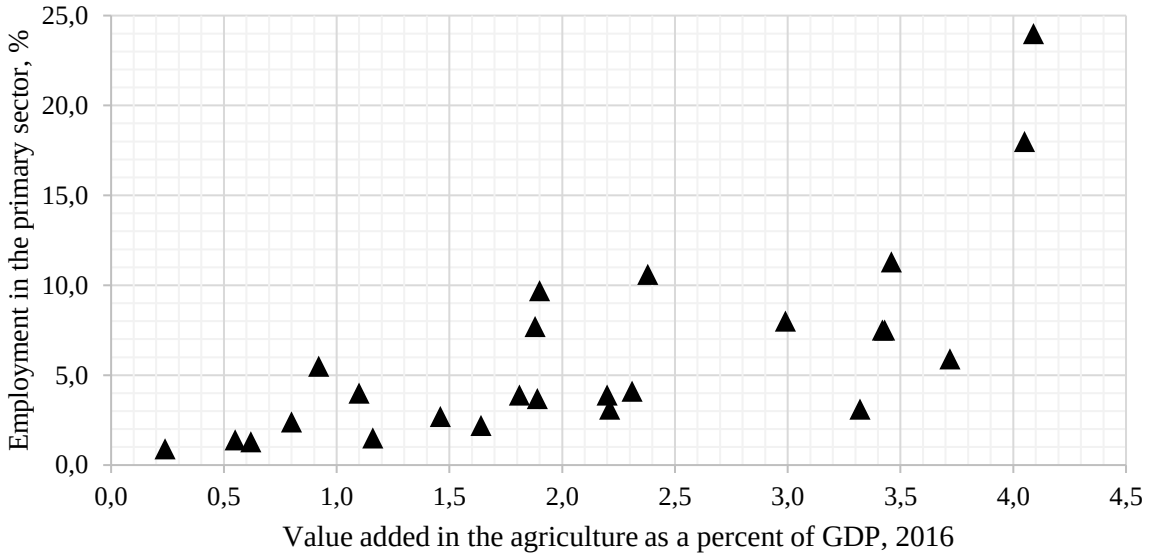
Source:https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf

Sample solution:
The share is the lowest in the primary sector in all cases. Developed regions have a low share of the agriculture sector in the GDP, while agriculture is more likely to be technology intensive thus does not require high level of manpower. In the new Member States, regional discrepancies are still high, the tertiary sector share is low, while employment share is above 5% in the primary sector. In the most developed regions in Europe, the same share is well under 5% in all cases.

Exercise 30

Purpose of the exercise: To demonstrate the relationship between the value added in the agriculture and the employment in the primary sector.
Required knowledge: To recognise, that value added in the agriculture is measured as a percent of GDP.

The x-axis represents the value added in the agricultural sector as percent of GDP, while the y-axis represents the employment share in the primary sector in %. What is the relationship between the two sets of data? Which could be Hungary, Germany and Romania? What could be the share of the Wester-European Member States compared to Hungary?



Source:https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf
https://www.theglobaleconomy.com/rankings/Share_of_agriculture/

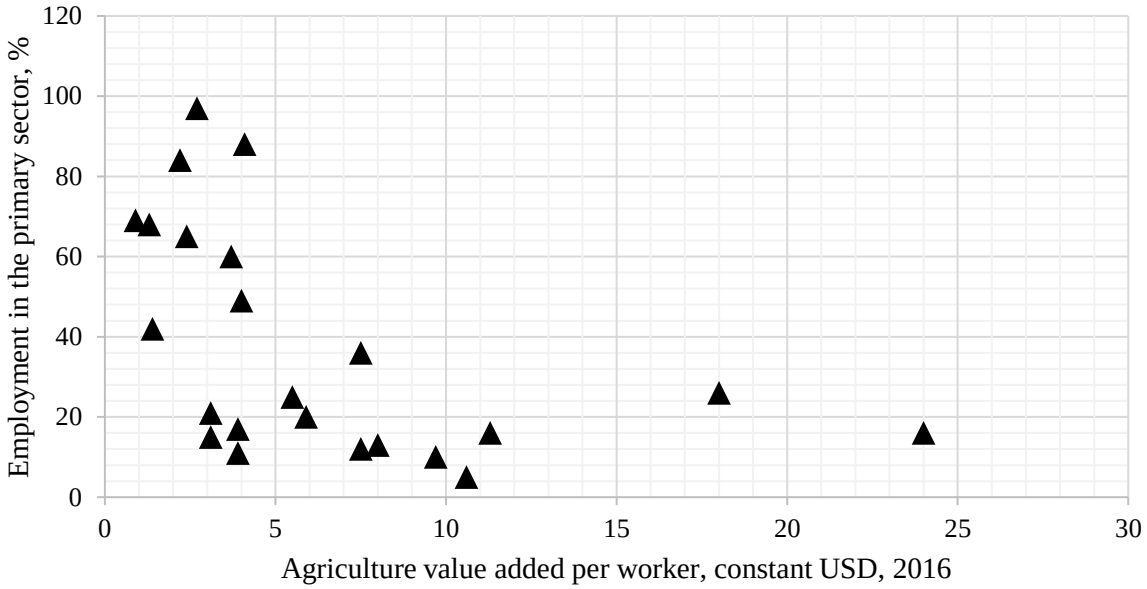
Hungary: 3,72% and 5,9%
Germany: 0,55% and 1,4%
Romania: 4,9% and 24%

Sample solution:
As the value added in the agriculture represents a higher share in the GDP, employment in the primary sector become higher, simply because the higher share of agriculture requires higher level of labour. However, in the more developed regions in Europe, the share of agriculture is generally very low in the GDP (1-2%). This implies that in the Western-European Member States, the share of agriculture is low in the GDP as well as the employment share in the primary sector.

Exercise 31

Purpose of the exercise: To demonstrate that the agriculture in more developed regions are primarily technology intensive and not labour intensive.
Required knowledge: To recognise that higher employment in the primary sector is associated with lower GDP per capita.

What is the relationship between the employment share in the primary sector and agriculture value added per worker based on the graph?



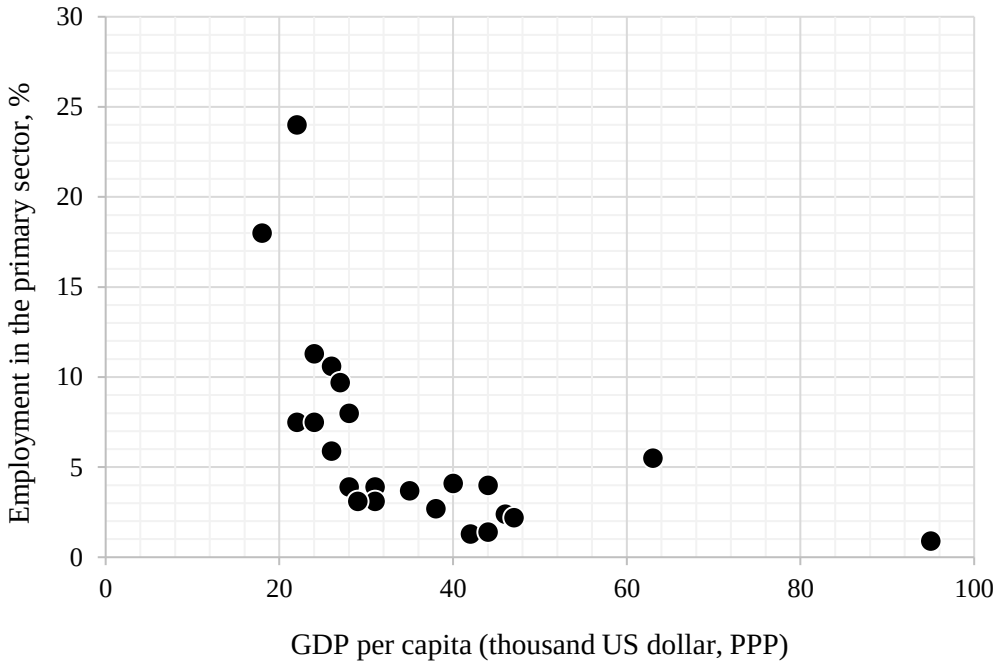
Source:https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf
https://www.theglobaleconomy.com/rankings/Agriculture_productivity/

Sample solution:
The relationship is obvious. As agriculture value added per worker increases, the employment in the primary sector quickly decreases. This indicates that higher added value is more likely to be associated with technology intensive agriculture, which requires lower amount of manpower compared to the labour intensive agriculture.

Exercise 32

Purpose of the exercise: To demonstrate that the higher the GDP per capita is, the less people are willing to work (and required to work) in the agriculture.
Required knowledge: To recognise that the share of agriculture is lower in the Member States with higher GDP per capita.

What is the connection between the GDP per capita and the employment in the primary sector? GDP per capita can be thought as a measurement how wealthy and developed the given Member States are in this example.



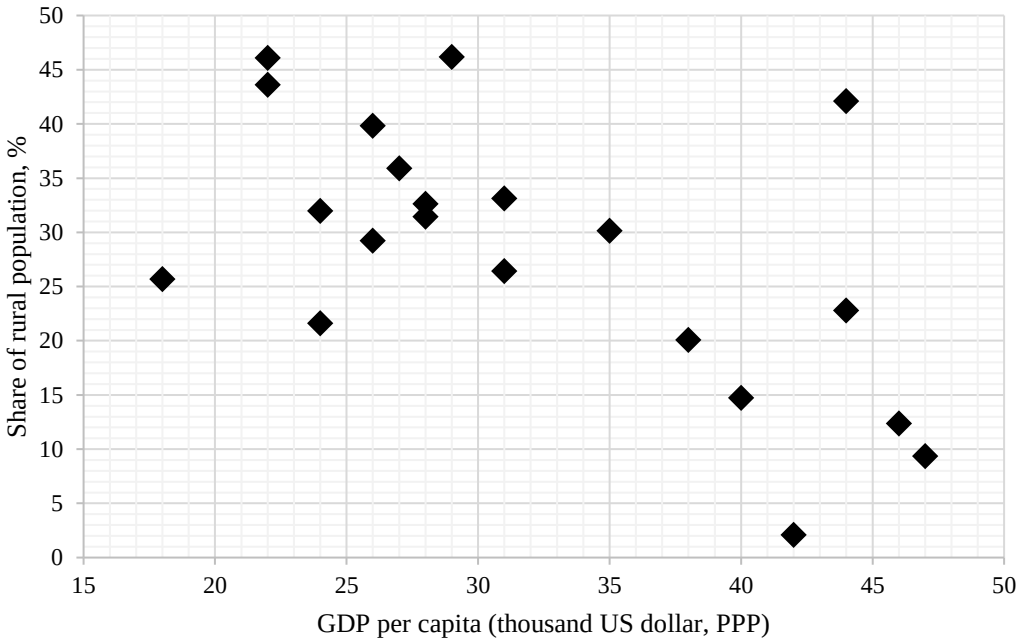
Source: https://www.theglobaleconomy.com/rankings/GDP_per_capita_PPP/
https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf

Sample solution:
The higher the GDP per capita is, the lower the share of the employment in the primary sector. At a higher level of standard of living, people are more likely to choose jobs outside of agriculture. Furthermore, if the agriculture sector is more developed, it requires less labour due to high level of technology.

Exercise 33

Purpose of the exercise: To demonstrate the relationship between the GDP per capita and the share of rural population in a given Member State.
Required knowledge: As GDP per capita increases, the share of rural population decreases.

Is there a relationship between the share of the population in the rural areas and the GDP per capita?



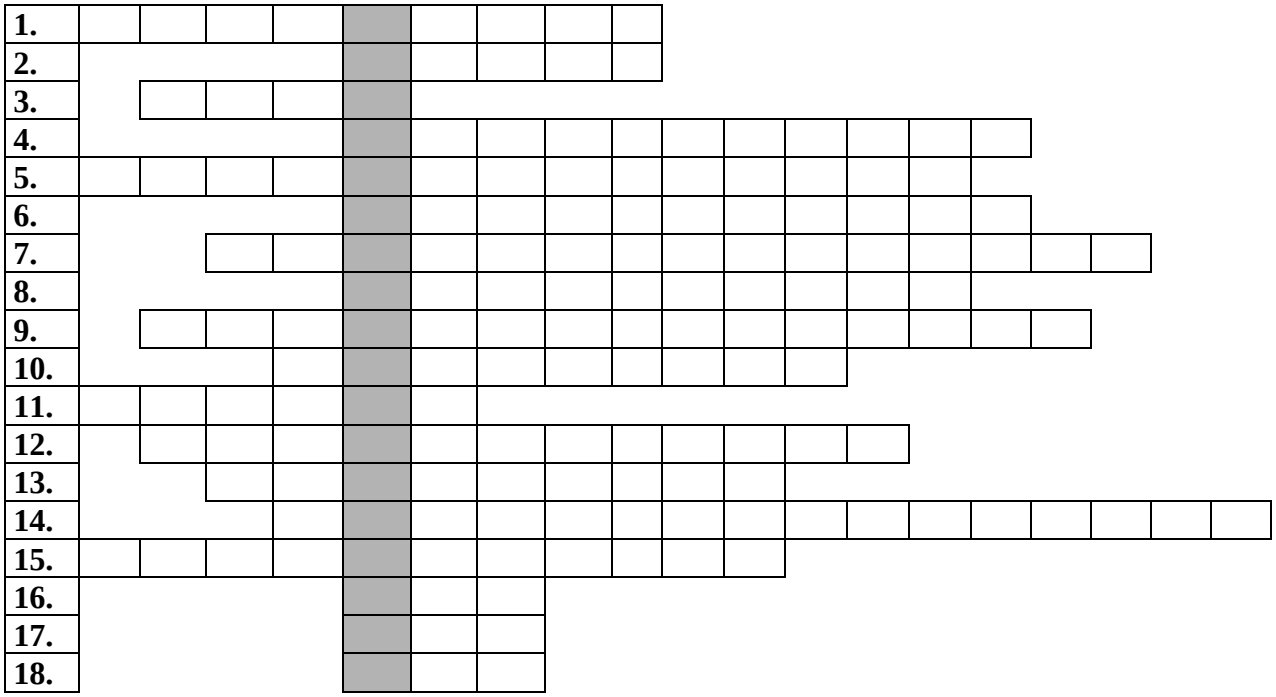
Source: https://www.theglobaleconomy.com/rankings/rural_population_percent/
https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/eu-rural-areas-primary-sector.pdf

Sample solution:
As GDP per capita increases in a given Member State, the share of rural population decreases. The higher the GDP per capita is associated with more developed Member States in general. In these countries or regions, higher number of people move to hte cities, which boosts the process of urbanization. The share of employment decreases in the agriculture, while agriculture activities are mostly associated with rural regions, which again led to the depopulation of the rural areas.

Exercise 34

Purpose of the exercise: A playful exercise to check one's general knowledge about agriculture.
Required knowledge: General agriculture knowledge is necessary to complete the task.

1. An important agricultural sector
2. Major area in the CAP
3. A financial tool provided by the EU for the agricultural producers to stabilise their income
4. A type of association, where the business owned and managed by the people who use its services
5. Strategic part of the economy, which turns the agricultural raw materials into durable products
6. Type of income, which adds to the main revenue
7. Major part of the agriculture, besides plant production
8. The cultivation of land and breeding of animals and plants to provide food to sustain and enhance life
9. The study of the allocation, distribution, and utilization of the resources used, along with the commodities produced by farming
10. The process of translating an idea or invention into a good or service but its level in the agriculture is critically low
11. One of the direction of the trade flow
12. The agricultural system where non-animal food are produced



Sample solution

		H	O	R	T	I	C	U	L	T	U	R	E							
						R	U	R	A	L										
						S	U	B	S	I	D	I	E	S						
		C	O	O	P	E	R	A	T	I	V	E								
			F	O	O	D	I	N	D	U	S	T	R	Y						
			A	D	D	I	T	I	O	N	A	L								
A	N	I	M	A	L	H	U	S	B	A	N	D	R	Y						
								A	G	R	I	C	U	L	T	U	R	E		
	A	G	R	I	C	U	L	T	U	R	A	L	E	C	O	N	O	M	I	C
	I	N	N	O	V	A	T	I	O	N										
					E	X	P	O	R	T										
					P	L	A	N	T	P	R	O	D	U	C	T	I	O	N	