

ITB-GSAT

OnlineTest

Instructions and Sample Items

Solving Quantitative Problems

Working time: 34 Minutes (for 15 items)

The items in the “Solving Quantitative Problems” group are quantitative problems of the kind that come up in everyday life and in generally familiar areas of economics or science. The primary aim of these items is to test your ability to think about numerical problems logically, as well as your ability to apply the basic rules of arithmetic, algebra, combinatorics and geometry. The focus is on finding the right approach to solving the problems; no complicated calculations are required.

- 1) A lecture given by a guest lecturer has so many audience members that only three quarters of them fit into the intended auditorium. A decision is therefore made to transmit the presentation to a second auditorium. In the end the second auditorium is filled with 78 audience members and the first auditorium still has 3 places free.

How many audience members are there in total in both auditoriums?

- (A) 324 audience members
- (B) 303 audience members
- (C) 300 audience members
- (D) 231 audience members

- 2) A company pays an employee € 0.30 for each kilometre driven on a business trip (outward and return journey) if he or she uses their own car for the trip. If the employee rents a car, the company pays for the car rental fees and the petrol costs. The costs of renting a car are € 90 and the petrol costs are € 0.10 per kilometre.

At what distance to the business trip's destination is it cheaper for the company if the employee uses his or her own car?

- (A) < 225 km
- (B) > 225 km
- (C) < 450 km
- (D) > 450 km

- 3) A company division is allocated monthly costs C. These are calculated on the basis of the arithmetic mean (average) of the costs C1 and C2. In April C1 was five times greater than C2.

By what percentage does C change if, in the following month C2 is doubled and C1 is halved?

- (A) – 25 %
- (B) – 12.5 %
- (C) ± 0 %
- (D) + 25 %

- 4) Overall profitability is an indicator which shows the total return on capital employed in the company. It can be calculated using the following formula:

$$\text{Overall profitability} = \frac{\text{Profit} + \text{Debt capital interest}}{\text{Total capital}} \cdot 100\%$$

Which of the following statements is **not** correct?

- (A) If total capital is doubled and profit and debt capital interest remain unchanged, overall profitability is halved.
- (B) Overall profitability can amount to no more than 100%.
- (C) Given a profit of € 90,000, debt capital interest of € 30,000, and a total capital of € 600,000, there is an overall profitability of 20%.
- (D) Overall profitability can also have negative values.

Linguistic Systems

Working time: 34 Minutes (for 15 items)

In the following exercises, you will be shown several expressions in invented foreign languages and their English translation. This will allow you to derive the meaning of individual words and some grammatical rules in the respective foreign language. This information will help you answer the subsequent questions. In each case two exercises relate to a certain language. Therefore please only use the provided expressions to answer the questions.

You may proceed on the assumption that

- there are no exceptions to the rules (e.g. irregular verbs) and
- only those rules apply which may be derived from the provided expressions.

Example:

koloa = I lie

kolôe = he lay

satoe = he stands

Question: What is **“I stood”** in the foreign language?

- (A) satoa
- (B) kolôa
- (C) satoe
- (D) satôa

Answer (D) is correct since:

1. The expressions for “I lie” and “he lay” differ only as regards the last two letters; hence “kol” must be the root of the verb “lie”.
2. The final letter of the expressions “he lay” and “he stands” is in both cases “e”; hence an appended “e” means “he”.
3. The two present tense forms (“I lie” and “he stands”) both have an “o” as the penultimate letter; hence “ô” as the penultimate letter must indicate the past tense and “a” as the last letter must mean “I”.
4. Consequently: “I stood” in the foreign language must be “satôa”.

Question 5 refers to the expressions:

puna selveui	=	The child is coming from the hut.
puna tipveu	=	The cat is going to the hut.
lom fanveui	=	The farmer is coming from the field.
borro selveu	=	The child is walking to the meadow.

5) "The child is walking to the field" is expressed in the foreign language by:

- (A) lom selveui
- (B) lom selveu
- (C) puna selveui
- (D) puna selveu

Question 6 refers to the expressions:

rumpulöpp	=	The child roars.
renguming tschik löppzi	=	The human protects his child.
rumpilemp gum	=	The goat roars loudly.
yanitzorr lempzi	=	The lion kills the goat.

6) "The child protects his goat." is expressed in the foreign language by:

- (A) rumpulemp tschik rengzi
- (B) rengilöpp tschik lempzi
- (C) rengulöpp tschik lempzi
- (D) rumpilemp tschik löppzi

Question 7 refers to the expressions:

lianvesu	=	they have danced
tioru	=	you (singular) play
satisaoru	=	you (singular) will play
sajusakune	=	I will sing
litivesu	=	you (singular) have danced

7) "they will dance" is expressed in the foreign language by:

- (A) saansavesu
- (B) saansali
- (C) savesu
- (D) lianlivesu

Question 8 refers to the expressions:

tundo ramodopo novot	=	The pupil called his uncle.
namidu kavino suvavot	=	The saleswoman greeted the teacher.
tundu kavinopu tetavosir	=	The schoolgirl is asking her teacher.
hidamo tundo nosir	=	The caretaker is scolding the pupil.

8) "The uncle greeted his caretaker" is expressed in the foreign language by:

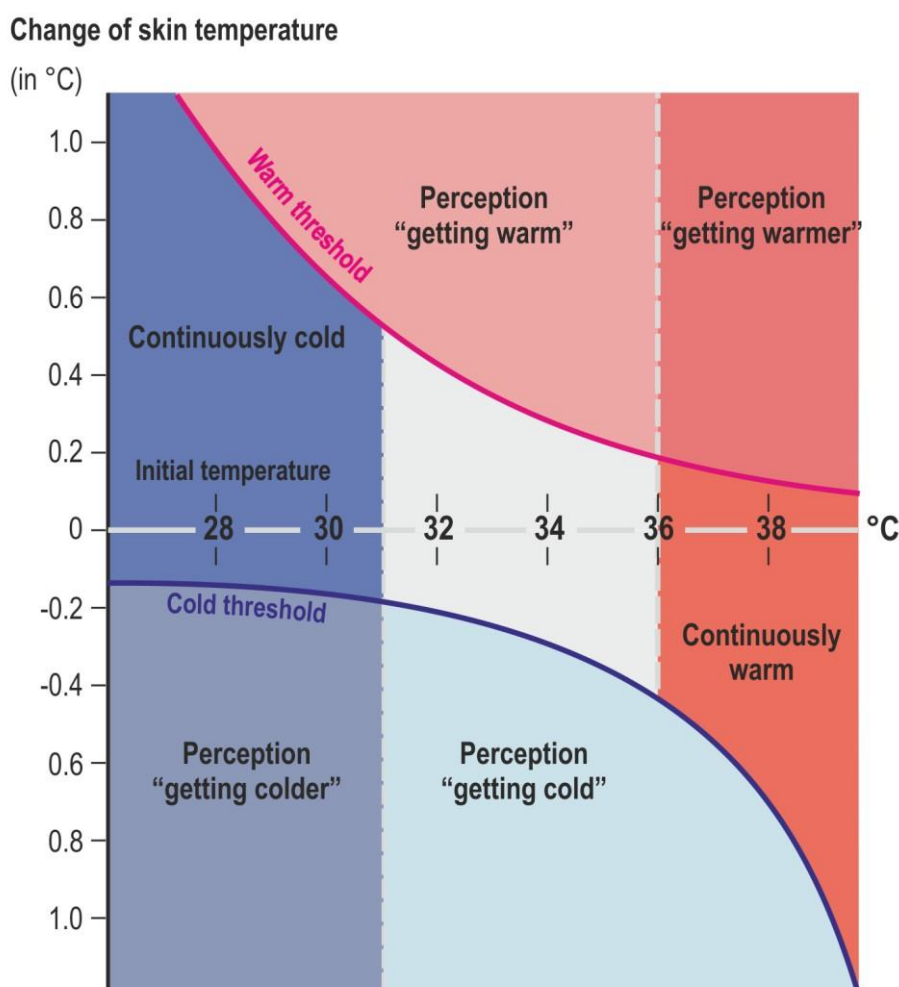
- (A) novot suvosir hidamo
- (B) namidu hidamopu suvavot
- (C) novot hidamopo suvasir
- (D) ramodo hidamopo suvavot

Diagrams and Tables

Working time: 34 Minutes (for 15 items)

The following exercises test your ability to correctly analyse and interpret charts from economic and social fields. All values are entered on a straight-line basis, unless otherwise stated in the corresponding exercises.

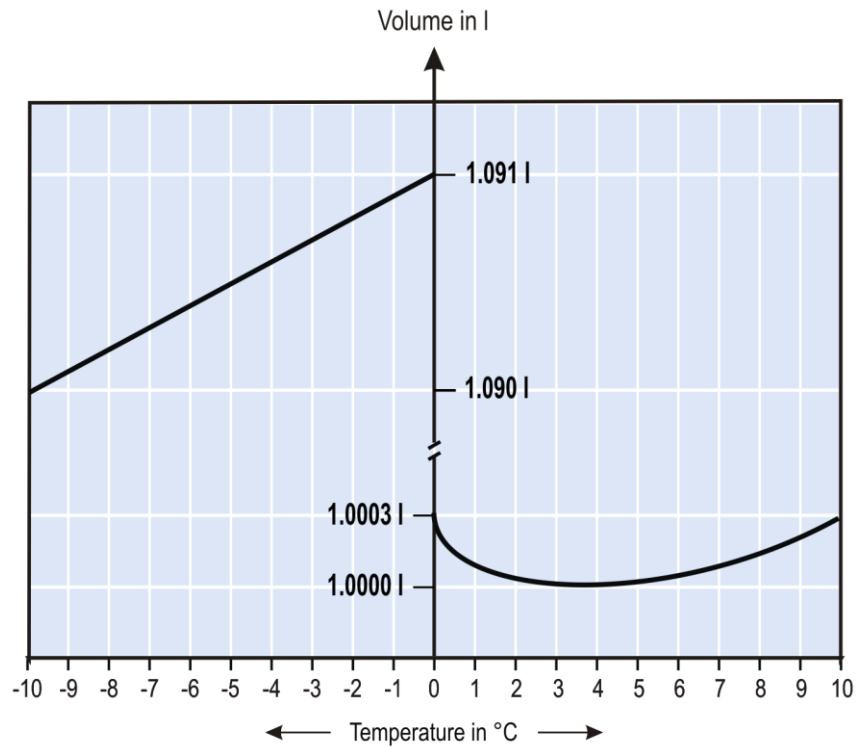
- 9) The graph shows the correlation between the initial temperature of a human body, an actual change in skin temperature and the corresponding perception of such a change.



Which of the following statements can be deduced from this information?

- I. Given an initial temperature of 30 °C, a change of temperature by at least 1 °C is necessary to be perceived as such.
 - II. Given a skin temperature of 32 °C, an increase by 0.5 °C is enough to trigger the perception "getting warm".
- (A) Only statement I can be deduced.
 (B) Only statement II can be deduced.
 (C) Both statements can be deduced.
 (D) None of the statements can be deduced.

- 10) The chart below shows how the volume of 1 kg of water changes as a function of temperature.

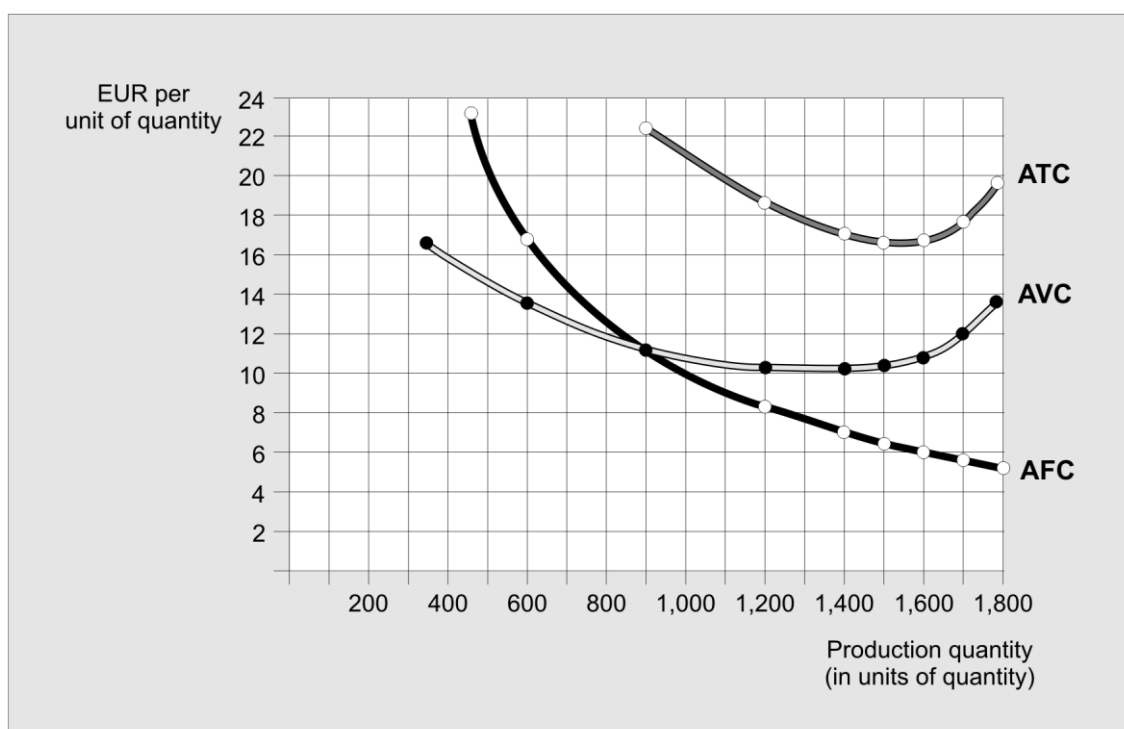


Which of the following statements can be deduced from this information?

- I. If a glass receptacle filled with water breaks, it must have been subjected to temperatures below 0 °C before.
 - II. When cutting a hole into a frozen lake and then measuring the temperature at different depths, the temperature is observed to decrease with the water depth.
- (A) Only statement I can be deduced.
(B) Only statement II can be deduced.
(C) Both statements can be deduced.
(D) None of the statements can be deduced.

- 11) In the production of goods there are two types of costs to be considered: the “fixed costs,” which remain constant regardless of the quantity produced (e.g. rent and insurance), and the “variable costs,” which are dependent on the quantity produced (e.g. wages and material costs). The total costs are the sum of the fixed and the variable costs.

The following graph shows the average total costs (ATC), the average fixed costs (AFC) and the average variable costs (AVC) in relation to the quantity of units produced.

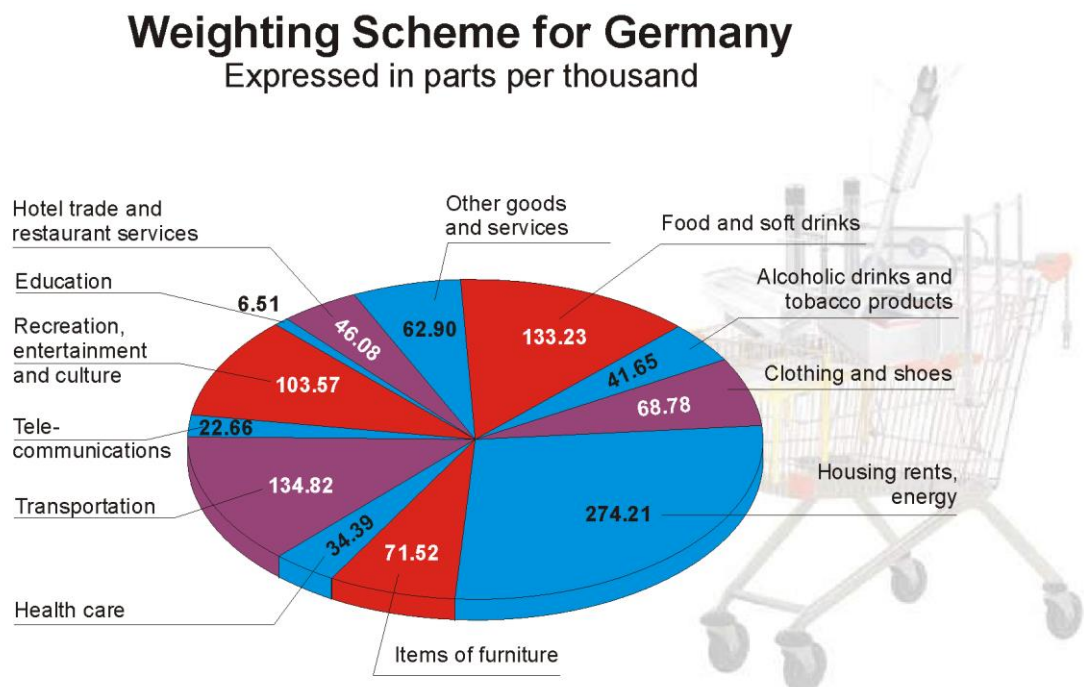


Which of the following statements can be deduced from this information?

- I. When 900 units are produced, the fixed costs account for about half of the total costs per unit.
 - II. The more units of quantity produced, the smaller the variable costs in proportion to the total costs.
- (A) Only statement I can be deduced.
 - (B) Only statement II can be deduced.
 - (C) Both statements can be deduced.
 - (D) None of the statements can be deduced.

- 12) The so-called basket of goods contains approximately 750 goods and services selected from a broad supply of goods, whose prices represent the basis for comparing the cost of living of private households over several years. For this purpose, a price index is calculated which – relating to a base year – reflects the percentage change in the cost of living. However, more important than the selection of “representative prices” is the weighting allocated to each product group included in the price index.

The following diagram shows this so-called weighting scheme for a certain year.



Which of the statements below can be deduced from this information?

- I. More than a quarter of the price increases are attributable to the expenditure on housing rents and energy.
 - II. Expenditure on clothing and shoes is given twice the weighting of healthcare expenditure in the price index.
- (A) Only statement I can be deduced.
 (B) Only statement II can be deduced.
 (C) Both statements can be deduced.
 (D) None of the statements can be deduced.

Solutions:

- 1) C
- 2) A
- 3) A
- 4) B

- 5) B
- 6) C
- 7) A
- 8) D

- 9) B
- 10) D
- 11) A
- 12) B