



Solving Quantitative Problems

The subtest "Solving Quantitative Problems" provides practical problems to be solved by using basic arithmetic operations. This test measures mathematical thought and the ability to solve basic mathematical problems. The level of the arithmetic operations to be performed is elementary.

22 questions in the test, working time 45 minutes



Instructions

Please read the instructions before you start with the examples.

Here you will find some problems which you have to solve.

Example:

A student works in a factory during the holidays. He earns 10 Euros an hour. He works 8 hours a day, 5 days a week. How much money has he earned at the end of 4 weeks of work?

- (A) 800 Euros
- (B) 1,200 Euros
- (C) 1,600 Euros
- (D) 2,000 Euros

Answer:

- (C) 1,600 Euros

How to reach the solution:

Daily wage = 10 Euros x 8 hours
Weekly wage = Daily wage x 5 days
Wage after 4 weeks = Weekly wage x 4 weeks

Sample question 1: degree of difficulty low

2,600 bottles contain 650 litres of a soft drink. How many litres do 5,000 bottles hold?

- (A) 338 litres
- (B) 1,000 litres
- (C) 1,250 litres
- (D) 1,300 litres

Sample question 2: degree of difficulty low

A working day is 8 hours long and a working week is five days long. A woman receives a wage of 25 Euros per hour. If she works for longer than 8 hours per day she receives 30 Euros for each extra hour she works. In 4 weeks, she earns 4,600 Euros.

How many hours did she work altogether in those four weeks?

- (A) 195
- (B) 180
- (C) 175
- (D) 160

Sample question 3: degree of difficulty medium

Corinna has a photo which is 9 cm wide and 6 cm high. She would like to enlarge it to a width of 15 cm. The ratio of width to height has to remain the same. How high will the photo be?

- (A) 11 cm
- (B) 10 cm
- (C) 9 cm
- (D) 8 cm

Sample question 4: degree of difficulty medium

Dora and her three siblings Anton, Berta and Carl are an average of 5 years old. Anton is 2, Berta 6 and Carl 7. Dora, her cousin Hanna, Hanna's brother Emil (18), Hanna's sister Franka (6) and Hanna's brother Gustav (1) are an average of 10 years old.

How old is Dora's cousin Hanna?

- (A) 5
- (B) 10
- (C) 15
- (D) 20

Sample question 5: degree of difficulty high

Together, two sports clubs (A and B) have x members; A has a members and B has b members. Some of the persons are members of both sports clubs. Which of the following expressions describes how many persons are members in only one of the two sports clubs?

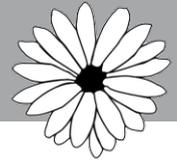
- (A) $x + a - b$
- (B) $2(a + b) - 2x$
- (C) $ab - 2x$
- (D) $2x - (a + b)$

Sample question 6: degree of difficulty high

A bottle X is filled entirely with orange juice. It contains 1 l of orange juice. Maria pours orange juice from this bottle X into two empty bottles Y and Z. Bottle Y is half as big as bottle X (in terms of volume). After the filling operation, bottle X still contains 0.6 l of orange juice; bottle Y is 1/5 full of orange juice; and bottle Z is half-full of orange juice. Maria fills bottle Z with water until the bottle is full.

How much liquid does bottle Z contain?

- (A) 0.1 l
- (B) 0.3 l
- (C) 0.4 l
- (D) 0.6 l



In the subtest “Inferring Relationships”, each question consists of two pairs of words. Two of the four words are missing, and you are to identify the matching words so that both pairs of words have an analogous (the same, similar) relationship. This requires that you find the rule governing the analogy and select the words accordingly.

This test measures logical linguistic thought. Test takers have to identify meaning, and generalise and abstract in order to find the rule. Eventually the rule has to be concretised in order to fill the gaps.

22 questions in the test, working time 10 minutes



Instructions

Please read the instructions before you start with the examples.

“Dark : light = hot : cold” – “dark” is the opposite of “light” and “hot” is the opposite of “cold”. Between the first and the second word, therefore, there is an analogous relationship, as there is between the third and the fourth word.

Each of the following problems contains two gaps. Your task is to work out which words fill the two gaps in such a way that an analogous relationship results on the left- and the right-hand side of the “=”. Please note: Whether a word comes before or after the colon “:” is of decisive importance for the correct solution of the analogy.

Example:

house : _____ = tree : _____

- (A) window – apple tree
- (B) villa – tree trunk
- (C) roof – branch
- (D) front door – furniture

Only if you choose “(C) roof – branch” is there an analogous relationship on the left- and on the right-hand side. A roof is part of a house. A branch is part of a tree.

The first word always goes in the first space and the second word always in the second space.

Please note:

All verbs are expressed as “to” plus the infinitive, e.g. “to drink”. If a word which can be either a noun or a verb appears without “to”, the noun form is intended. For example, “drink” is intended in the sense of “beverage”.

Sample question 1: degree of difficulty low

pear : fruit = _____ : _____

- (A) motor – motorcycle
- (B) hammer – tool
- (C) grass – cow
- (D) animal – elephant

Sample question 2: degree of difficulty low

to cut : _____ = _____ : ball

- (A) sharp – round
- (B) bread – football
- (C) knife – to play
- (D) blood – to throw

Sample question 3: degree of difficulty medium

warmth : _____ = wind : _____

- (A) temperature – tornado
- (B) cold – wind velocity
- (C) flame – rain
- (D) heat – storm

Sample question 4: degree of difficulty medium

thick : thin = _____ : _____

- (A) tired – sleepy
- (B) sad – happy
- (C) warm – hot
- (D) hungry – thirsty

Sample question 5: degree of difficulty high

diversity : _____ = _____ : action

- (A) uniformity – success
- (B) distance – passiveness
- (C) variety – deed
- (D) uniformity – measure

Sample question 6: degree of difficulty high

intentional : _____ = coincidental : _____

- (A) purposeful – unplanned
- (B) unintentional – unplanned
- (C) planned – chaotic
- (D) orderly – disorderly



Completing Patterns

In the subtest "Completing Patterns", lines, circles, quadrilateral and other geometrical shapes are arranged in the fields of a matrix according to a specific rule. You are to find the rule and apply it by identifying the missing shape in the last field. This test measures logical graphic thought. Language skills or educational background are irrelevant.

22 questions in the test, working time 20 minutes



Instructions

Please read the instructions before you start with the examples.

For this group of items, you will read the instructions before the working time begins. The working time does not begin until after the instructions have been read. The test administrator will tell you when to begin.

Each of the following items consists of nine fields. Eight of the fields contain figures. In the ninth field (at the bottom right) is a question mark.

		?

(A)	(B)	(C)

(D)	(E)	(F)

The arrangement of the figures has been carried out according to certain rules. Your task is to recognise these rules and apply them in order to find the ninth figure.

The rules apply

- from left to right,
- OR from top to bottom,
- OR from left to right **AND** from top to bottom.

There are no other directions (e.g. diagonal) in which the rules can apply!

In order to solve an item, you need one, two or three rules. It is also possible that one rule applies horizontally and another rule vertically.

Below the nine fields, you will find six figures (A, B, C, D, E and F). Select the figure which should take the place of the question mark. How to reach the solution for the example will be described in sample question 3.

Sample question 1: degree of difficulty low

		?

(A)	(B)	(C)

(D)	(E)	(F)

Sample question 2: degree of difficulty low

		?

(A)	(B)	(C)

(D)	(E)	(F)



Sample question 3:
degree of
difficulty medium

		?

(A)	(B)	(C)

(D)	(E)	(F)

Sample question 5:
degree of
difficulty high

		?

(A)	(B)	(C)

(D)	(E)	(F)

Sample question 4:
degree of
difficulty medium

		?

(A)	(B)	(C)

(D)	(E)	(F)

Sample question 6:
degree of
difficulty high

		?

(A)	(B)	(C)

(D)	(E)	(F)



Continuing Numerical Series

The subtest "Continuing Numerical Series" provides a series of numbers structured according to a specific rule. You are to find the rule and apply it in order to identify the missing number. This test measures logical numerical thought. Knowledge of the four basic arithmetical operations addition, subtraction, multiplication and division is sufficient to answer the questions.

22 questions in the test, working time 25 minutes



Instructions

Please read the instructions before you start with the examples.

For this group of items, you will read the instructions before the working time begins. The working time does not begin until after the instructions have been read. The test administrator will tell you when to begin.

Each item consists of a numerical series, formed according to a particular rule. Your task is to find the next number in the series – its place is marked by the question mark (?).

Example 1:

5 15 13 23 21 31 29 ?

The numerical series is formed by the following arithmetical operation: +10 -2 +10 -2 +10 -2.

5+10=15 15-2=13 13+10=23 and so on.

The number that should be in the place of the question mark (?) is therefore **39** (29 + 10).

Example 2:

35 30 120 60 55 220 110 ?

The rule for this numerical series is as follows: -5 x4 ÷2 -5 x4 ÷2.

The number that should be in the place of the question mark (?) is therefore **105** (110 – 5).

Each rule can contain only the four basic arithmetical operations [addition (+), subtraction (-), multiplication (x) and division (÷)].

Proceed step by step:

1. First take a look at the numerical series.
2. Work out the rule on which the numerical series is based.
3. Then apply the rule in order to find the next number in the series. Carry out the necessary arithmetical operation and calculate the number that should be entered in the place of the question mark (?).

The solution number is always a whole number.

The solution number can be positive, negative or zero.

Any digit only ever occurs once in a solution number; in other words, solution numbers such as 11, 44 or 100 cannot occur.

On the answer sheet, mark the digits that appear in the solution number. If the number is negative, please mark the "-" on the answer sheet as well as the digits. The order of the digits does not matter.

Examples:

For the number "14", mark the "1" and the "4".

	-	0	1	2	3	4	5	6	7	8	9
01	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

For the number "41", also mark the "1" and the "4".

	-	0	1	2	3	4	5	6	7	8	9
02	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

For the number "-14", mark the "-", the "1" and the "4".

	-	0	1	2	3	4	5	6	7	8	9
03	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

Sample question 1: degree of difficulty low

25 35 15 45 5 55 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
01	<input type="checkbox"/>										

Sample question 2: degree of difficulty low

5 50 20 200 170 1700 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
02	<input type="checkbox"/>										

Sample question 3: degree of difficulty medium

60 66 96 100 120 122 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
03	<input type="checkbox"/>										

Sample question 4: degree of difficulty medium

2 6 16 64 640 644 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
04	<input type="checkbox"/>										

Sample question 5: degree of difficulty high

2048 32 1 16 128 32 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
05	<input type="checkbox"/>										

Sample question 6: degree of difficulty high

6 18 0 24 -6 30 ?

Solution:

	-	0	1	2	3	4	5	6	7	8	9
06	<input type="checkbox"/>										