



**ITB**

Institut für Test- und  
Begabungsforschung

THE ADMISSION TEST  
OF THE  
KARL LANDSTEINER UNIVERSITY  
OF HEALTH SCIENCES

*INFORMATION BROCHURE*

*THIS BROCHURE IS AVAILABLE FREE OF CHARGE AT*

*WWW.KL.AC.AT*

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### Important Pointers

On the day of the test, be at your workspace and login to the test during the time slot you can find on your test invitation. You must have valid official photographic identification (preferably your passport or another government-issued identification card) and writing utensils (ballpoint pens or felt-tip pens) with you. Please note in advance which objects you are permitted to use during the test.

Later you will be told whether you have been admitted to the second selection round (selection interview).

## THE MOST IMPORTANT FACTS AT A GLANCE

- To take the admission test of the Karl Landsteiner University of Health Sciences, you have to register online. You can register at the online registration: [www.kl.ac.at/studium/bewerbung-und-zulassung](http://www.kl.ac.at/studium/bewerbung-und-zulassung) (German) or [www.kl.ac.at/en/study/application-and-admission](http://www.kl.ac.at/en/study/application-and-admission) (English)
- To be admitted to your test session, you must have valid official photographic identification with you. Please also have writing utensils (pens) and blank paper for notes ready.
- The admission test takes approximately two hours and ten minutes including the registration procedure and the introduction to the test.
- Prepare well for the test. Work through the example test items and read the instructions for the various subtests carefully. Check your technical setup well in advance.
- You may not use the following objects during the test: books, mobile phones (even if they are switched off) or tablet PCs, smartwatches, cameras, PDAs, notebooks, MP3 players, spectacle cases, pencil cases, jackets, backpacks, purses, cloth bags, non-transparent plastic bags.
- Basic calculators (not internet-enabled, i.e., no calculator apps), food and writing utensils are permitted; they can be carried in a transparent plastic bag (like at the airport).
- Please follow the test administrator's instructions closely. These instructions, as well as the instructions provided online, are essential.
- If you are unsure of an answer, you should guess! No points are subtracted for wrong answers.
- The selection process consists of two parts: the first part is the admission test, which you take from your home computer via so-called proctoring. Those persons who receive the highest scores on the test will be admitted to the second part of the selection procedure: an interview.

## OVERVIEW

### What Will I Learn in this Brochure?

This brochure gives you an overview of the concept behind the admission test of the Karl Landsteiner University of Health Sciences and it outlines how the test is structured. Then it will give explanations of how the test is administered and graded, and you will receive pointers on how to best prepare for the test.

Finally, we will give you the opportunity to familiarize yourself with the test by reading the original instructions and working through a number of example test items.

For information on the second selection round (an interview), please see our website:

<https://www.kl.ac.at/en/study/medical-science-bachelor-programme/selection-process>

### The Admission Test of the Karl Landsteiner University of Health Sciences

The admission test of the Karl Landsteiner University of Health Sciences is a general scholastic aptitude test. It tests abilities that are important to successfully study at the university level. The test is an objective aptitude assessment tool which makes the same demands on all applicants. A new version of the test is used on each test date, but the basic structure remains the same. No specific knowledge is required to take the test. The focus of the test is neither on specialized knowledge nor on aspects of aptitude already expressed in the A-levels (or equivalent general certificates of education). All of the information needed to solve the items is provided in the texts and graphs of the items themselves. The test consists of altogether four different subtests which the test participants work through one after the other without a break. The test itself lasts approximately 2 hours.

The following table gives you an overview of the test structure:

SUBTEST	NO. OF SCORED ITEMS (+ SAMPLE ITEMS) <sup>1</sup>	ALLOTTED TIME
ANALYZING GRAPHS AND TABLES	12 (+3)	34 min.
ANALYZING TEXTS	12 (+3)	30 min.
SOLVING QUANTITATIVE PROBLEMS	12 (+3)	34 min.
IDENTIFYING RULES	12 (+3)	22 min.

<sup>1</sup> All scored items are tested before they are used. For this purpose, in addition to 12 scored items, each subtest contains 3 sample items that are not taken into account when determining the test results. This pre-testing of the items ensures that all items fulfill high quality standards.

## THE TEST PROCEDURE

### Timing

The administration of the admission test, including the registration procedure and an introduction to the test, takes approximately two hours and ten minutes.

Before the test you will be informed about your specific time slot, i.e., you will be assigned a certain period of time (one hour) for your test day in which you have to start the test. On the test date, please be at your workspace and login to the test during the time slot you can find on your test invitation in time. You will not be allowed to participate the test if you miss your time slot, even if you are not responsible for the delay. The duration of the time span (one hour) is of course the same for all participants of a test. The registration and the admission controls will take place during your individual time slot. Subsequently the actual test will begin. The test is normally finished after about two hours.

### What is Proctoring?

With proctoring, you can take a test or exam from your home computer. You are supervised live by a so-called proctor via a webcam, microphone and screen sharing. The proctor takes on the role of the supervisor in the test room and you can communicate with the proctor via a chat function or your computer's microphone. The task of the proctor is to prevent or report forbidden behavior. For this reason, all tests are recorded (webcam image and screen view) and stored for a limited time. The identity check – i.e., the verification of the person taking the exam / registered for the exam with a valid official photo identification – is also carried out via proctoring. For this purpose, one photo each of the valid official photo ID (with concealed ID number) and of the test participant is taken and stored for a limited time. For more information about data protection, see <https://itb-academic-tests.org/en/universities/data-protection-itb/>.

### Technical Requirements

For a test procedure with proctoring, you should first check whether your computer meets the technical requirements. Only then is it possible for you to take a test with proctoring. In addition, you should be able to work alone and completely undisturbed on the test day for the duration of the test (please allow for a time buffer).

In the following you will find an overview of the technical requirements for proctoring tests. The testing is exclusively web-based.

**Important:** You are responsible for the functionality of the technical equipment. In case of technical problems, we will review each individual case.

- **Stable Internet connection**
  - o Please make sure that your internet connection is stable! If the monitoring is not possible due to a lack of internet connection and the proctor is not able to contact you, your test will be cancelled.
  - o We recommend a stable connection with a minimum upload speed of 1,5 Mbps. You can check your connection in a speedtest, for example on [www.speedtest.net](http://www.speedtest.net).
- **Power supply of your computer**
  - o If you are using a laptop, connect it to the power supply via the charging cable.

- **Working webcam**
  - o Both a webcam integrated in the laptop and a webcam attached separately to the screen are allowed. The camera of a cell phone may not be used as a replacement for the webcam.
  - o You can test your webcam here: <https://www.onlinemictest.com/webcam-test/>
- **Working smartphone or tablet**
  - o You need to use a mobile device (e.g., smartphone or tablet) to allow for a second perspective during the proctoring.
  - o It is recommended to connect your mobile device to the power supply via a charging cable.
  - o Required operating system: Android 5.1 or higher and Apple iOS 10.0 or higher.
  - o Note: Huawei P30, Samsung Galaxy A3, and Google Pixel 3 and newer are not supported.
- **Working speakers and microphone**
  - o You may use microphones of headsets or headphones if you place them visibly on the workstation. You are not allowed to wear headsets and headphones.
  - o You can test your speakers and microphone here: <https://www.onlinemictest.com/>
- **Internet browser: Google Chrome or Microsoft Edge**
  - o The proctoring system runs exclusively on these browsers!
  - o Please [download](#) one of them before the test.
- **Operating system**
  - o Windows 7 or higher, Mac OS X or higher and most Linux systems.
  - o You can check your operating system here: <https://whatsmyos.com/>
- **Screen size and settings**
  - o We recommend a screen size of at least 15 inch. The size of the screen is especially important so that you can see the tasks as well as possible on your screen.
  - o If you have a smaller screen, you can still do the test. However, you may need to scroll to see the entire task.
  - o A separate screen may only be used if it has been set to “duplicate” the display and the webcam can record you as required for proctoring.

### System Check Before the Test

In the run-up to the test (a few days before) you will receive a standardized invitation e-mail from the proctoring system. This e-mail is also connected with a system check – testing of some technical requirements (e.g., the functioning of the webcam). Only if this system check is completed successfully, you can start the test. We recommend that you carry out the system check as early as possible before the test day, so that you have the opportunity to correct any problems.

**Important:** Please carry out the system check on the device on which you want to run the test. Once the system check has been successfully completed, you will not be able to change the device.

**Important:** A successful system check only means that the basic technical requirements are met. Despite a successful system check, technical problems may occur on the day of testing. However, these are rare.

**Important:** All e-mails will be sent to the e-mail address given in your application or registration! So, make sure that you have access to this account.

### The Testing Process

- 1. Start Proctoring** – Within your start time slot you can start the proctoring by clicking on the link. If you have not already done so, the system check will be carried out first. Before you start the test, you will be asked to release your webcam, microphone and screen.
- 2. Identity Check** – The second step is the identity check. You will be asked to hold your valid official photo ID into the webcam so that the ID number is covered. Your name (first and last name), the date until which the ID is valid, and the photo must be visible. A photo will be taken of the photo ID. Afterwards a photo of your face will be taken. The system will guide you through this process. You may have to wait a few minutes. We put a lot of emphasis on a thorough identity check, so there can be a kind of “queue” if many people want to start the test at the same time. This is one of the reasons why there are different start time slots.
- 3. Recording Start** – Afterwards, recording starts via webcam, smartphone/tablet and microphone – i.e., proctoring. You will be assigned a proctor (m/f/d) who will “accompany” you during the test. All proctors speak German and English.
- 4. Test Start** – By clicking on the link behind the link on the left-hand side of the screen under “Individual Information”, you will enter the test environment and receive further information relevant to the test execution – regardless of proctoring.
- 5. During the Test** – You can run the test “normally” like any other online test. In the ideal case, you will hardly notice the proctoring. During the test it is possible that the proctor will contact you via the chat, e.g., in case of minor technical problems or if the proctor wants to check if all rules are followed. There is also a technical support for emergencies.
- 6. End of the Test** – You can either actively end the test before the time expires or the test will be automatically ended at the end of the processing time. You can then close the tab with the test environment. By clicking on the red **“Finish Session” button** in the upper right corner of the proctoring tab, you will end the proctoring and the test if you have not already finished the test. **Please only click on this button if you really want to finish the test. It is not possible to restart the test or proctoring afterwards!**

For **further information** on proctoring, please also check the following website before the test:  
<https://itb-academic-tests.org/en/participants/proctoring/>

**Important:** For the Admission Test, a mobile device (e.g., smartphone or tablet) is necessary to allow for a second perspective during the proctoring.

## Preparing for the Test

The abilities assessed with the admission test are the result of many years of learning and development, and – for the most part – can therefore not be influenced shortly before taking the test. In any case, it is useless to memorize facts in preparation for the test. No specialized knowledge is required to solve any of the items.

On the other hand, it is helpful to be informed in advance about the test administration procedure and conditions and the different types of items. Most test participants feel surer of themselves if they know in advance what the test will be like. Also, you save time in the test situation if you have already familiarized yourself with the pointers for the individual subtests.

The following section of this brochure contains example items. They are designed to show you what kinds of items are included in the test. They will give you a good impression of the demands made on you by the test and an opportunity to see how long it takes to solve each type of item. You can work through the example items once under real test conditions; afterwards, you should take a closer look at the items you had difficulties with. You are also advised to read through the explanations of the solutions to the individual items. That will help you to identify typical kinds of mistakes and you know what to watch out for when you are taking the test.

Please do not try to make a prediction of your test score on the basis of your performance on the example items. Such a prediction would be misleading on account of the small number of example items presented here.

Your preparations for the test should include more than just working through the example items. Please check your technical setup well in advance. Check to make sure that your official photographic identification will still be valid on the test date. Also remember that the test will make high demands on your stamina, resilience, ability to concentrate, and ability to cope with mental and physical stress. Above that you have the best chances of performing well if you take the test in a well-rested state.

It can also have a positive effect on your performance if you are familiar with various relaxation techniques – however unremarkable they might seem at first glance! Simple exercises such as calm, deep breathing, shaking out your hands, stretching, and adopting a relaxed sitting position can help you to loosen or avoid tension and reduce stage fright.



## Sensible Techniques for Taking the Test

Even if your final score depends more on how precisely and correctly you solve the problems than on how quickly you come to your solutions, it is important to manage your time well and make the best possible use of it. Your chances of performing well are best if you divide your time among the items evenly and work through the test carefully, but quickly.

One important prerequisite for earning a good score on the test is to read the items carefully. If you merely skim through the text, it is all too easy to overlook information that is important to identify the correct solution.

Since the first few items in each subtest are, on the whole, easier than the following ones, it is sensible to work through the items in the order in which they appear in the test system. This will give you a certain amount of practice in solving the items, which will benefit you when you get to the more difficult ones. However, you should not spend too much time on items you find extremely difficult or unusual. It makes more sense to use the time to solve other items you feel more comfortable with. In any case, if you are not able to solve an item in a certain subtest, never assume that you also won't be able to cope with the following items. People have very different perceptions of how difficult an item is. It can easily happen that a person has trouble solving an item with a low level of difficulty and then has no difficulty at all with the following items, even if the majority of test takers find those items more difficult. When you are working through the test, keep the following in mind: the test is designed in such a way that the majority of participants will solve 30 to 70 per cent of the items correctly. In other words, it is almost impossible to solve all of the items correctly!

In many cases, it is best to come to a solution on your own, and then to see whether your solution is among the answers offered. If you proceed the other way around – that is, if you begin by looking at the answers – you can easily become confused, because some of the wrong answers are designed to seem plausible at first sight.

If you can't manage to solve an item, you can use the “process of elimination” to figure out which of the solutions are most likely to be wrong. Often it is easier to make a decision if you have already ruled out some of the answers offered.

If you find you are running out of time, you still have the possibility of skimming through an item superficially and then marking the answer you think could be the right one, or of marking a random answer! No points are subtracted for wrong answers, so you can earn a few extra points by guessing.

## Pointers on Non-Permissible Behaviour

For taking this kind of test, it is extremely important that all participants have the same working conditions, that everyone follows the same rules, and that no one gains an advantage for himself to the disadvantage of others. To prevent cheating attempts, we use proctoring. Remember that, in a certain sense, all of the test participants are in a competition situation. Just like in sports, violations of the rules must therefore be penalized. You will accordingly save yourself a lot of trouble if you avoid the following conduct.

### **The following behaviors are not allowed:**

- The use of non-permissible aids like cell phones, dictionaries, etc.
- Opening other browser windows and programs
- Help from third parties
- Taking the test under a false name
- Photographing or duplicating the tasks (each attempt or action will be legally prosecuted and may result in claims for damages of up to 100,000 euros)

You can eat and drink during the test and leave the room for bathroom breaks. You are allowed to use earplugs or similar (no headphones or headsets).

## EXAMPLE ITEMS

On the following pages you will be introduced to...

- the pointers for working through the individual subtests. These pointers will help you to understand what abilities are tested with each subtest and what you have to do to solve the items.
- three example items for each subtest. These examples give you an impression of the contents, difficulty and other characteristics of the respective type of item.

Here are a few pointers on working through the example items and preparing for the test:

- Only use the aids you will be permitted to use when you are taking the real test. Do not use any other aids!
- Compare your answers with the answers given in this brochure.
- Work through the solution processes carefully, even for the items you solved correctly.
- Do not, however, try to draw direct conclusions about your chances of performing well on the test from your performance on the example items.
- It is possible that some of your wrong answers are the result of having misunderstood the pointers or the contents of the items.
- Read the instructions carefully. If you prepare well, you will already be familiar with these instructions when you are taking the real test, and you will be able to use the entire processing time for solving the items.

**Example Items “Analyzing Graphs and Tables”**

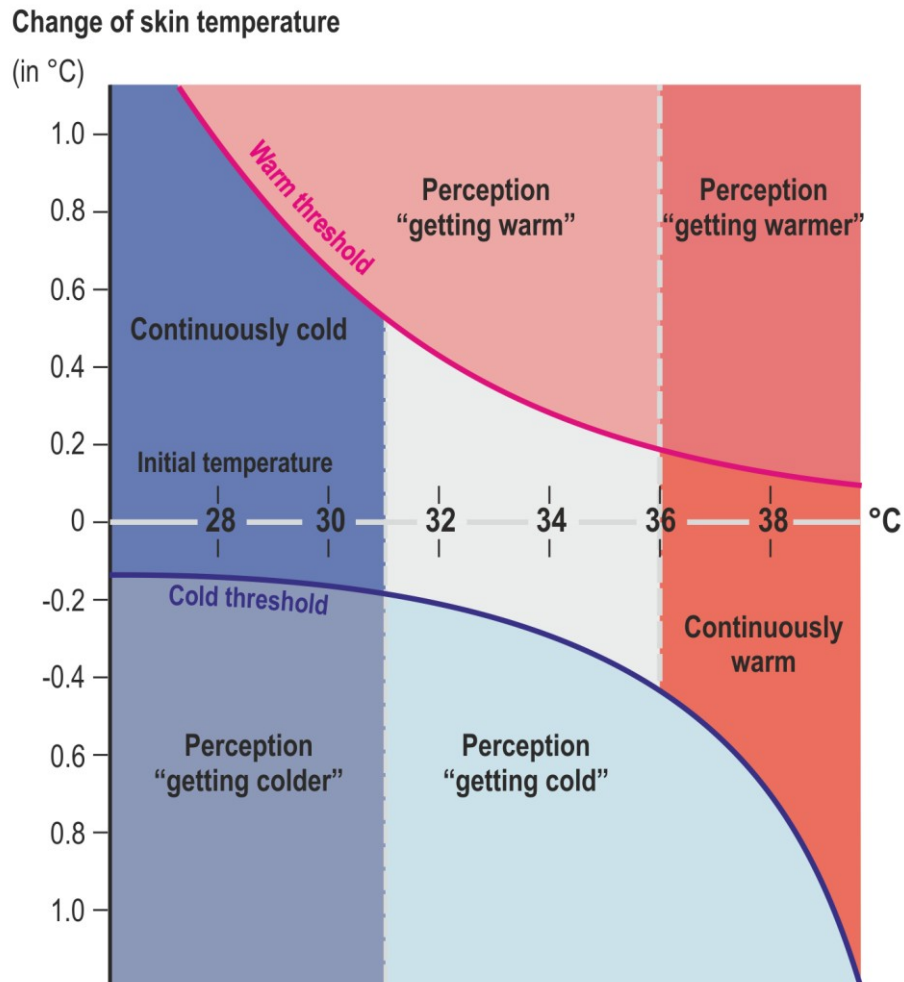
Subtest: Analyzing Graphs and Tables

**Working time in the original test for 15 items: 34 minutes**

The following items are to test your capabilities of correctly analyzing and interpreting tables and graphs. All values are entered linearly, unless stated otherwise in the respective items. For each item, select the correct answer from the proposed solutions (A) to (D) and mark the corresponding letter on the answer sheet.

Example Items "Analyzing Graphs and Tables"

01. 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.

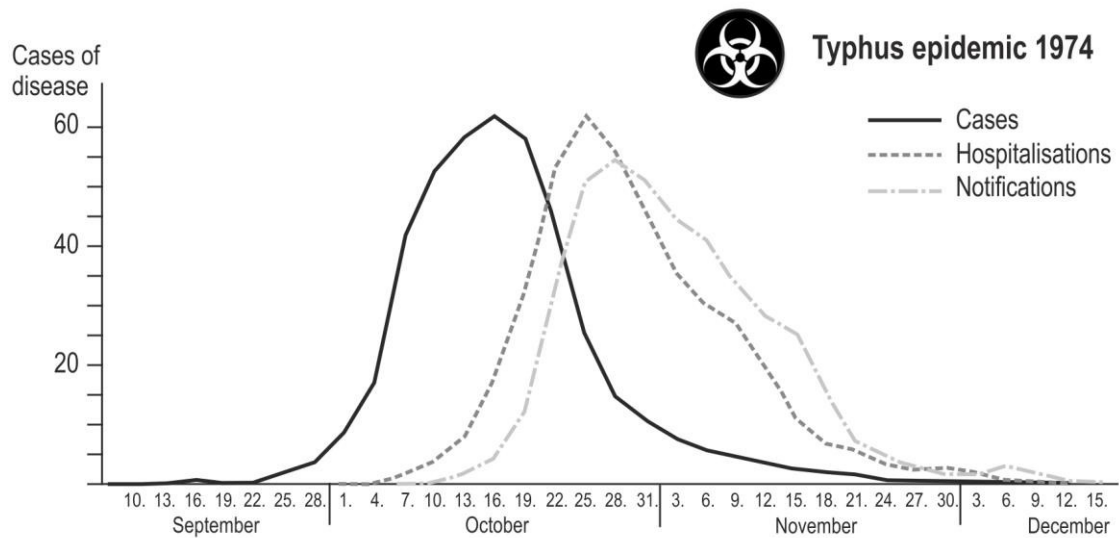


Which of the following statements can be deduced from this information?

- 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) Neither of the two statements can be deduced.

**Example Items "Analyzing Graphs and Tables"**

- 02.** The graph shows the course of a typhus epidemic in 1974. It differentiates between the number of cases (persons who fell ill), the number of admissions to hospital (hospitalisations) and the number of notifications of the health authorities.

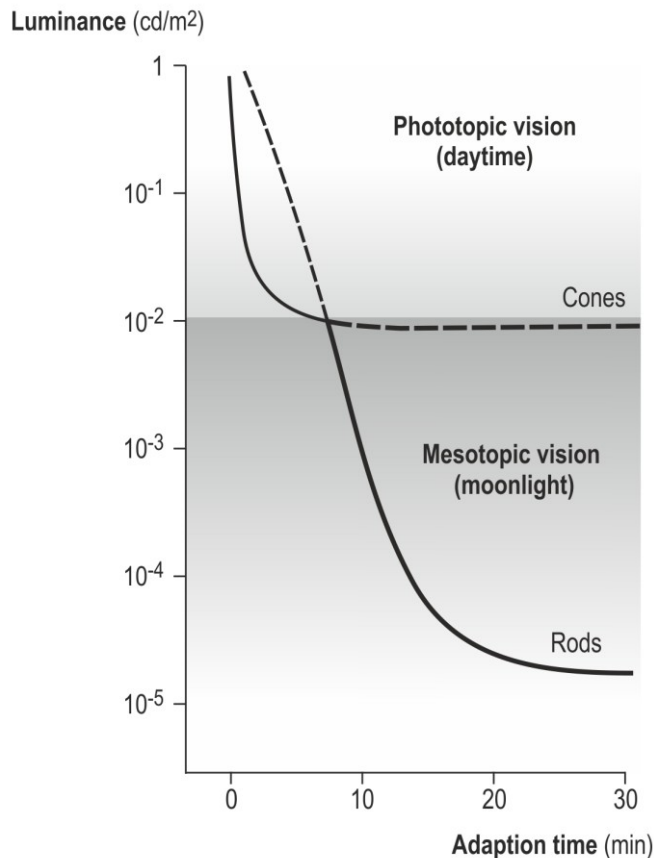


Which of the following statements can be deduced from this information?

- I. On November 15, more than 25 cases were reported to the health authorities, although only 2 or 3 persons fell ill on that day.
  - II. Only every third person who fell ill on October 16 was hospitalised.
- (A) Only statement I can be deduced.  
(B) Only statement II can be deduced.  
(C) Both statements can be deduced.  
(D) Neither of the two statements can be deduced.

**Example Items "Analyzing Graphs and Tables"**

- 03.** In the human eye, so-called "cones" and "rods" react to the incoming light. In the case of relatively high luminance (daytime light), the cone mechanism – which also enables the perception of colour – is dominant. In the case of low luminance (moonlight), vision is enabled by way of the rod mechanism, which does not allow the perception of colour. The diagram shows the transition between these two systems. It shows the adaptation time in the case of darkening, i.e. the time required by the respective systems to increase their sensitivity to the point where improved vision performance is possible. The dashed lines show the curve in the case that the respective other system fails.



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

- I. If the rod mechanism fails, the vision performance of the respective person will not improve any further after 15 minutes in the case of darkening from 1 to 0.005 cd/m<sup>2</sup>.
  - II. In the case of darkening from 1 to 0.0001 cd/m<sup>2</sup>, the vision performance of a person with normal eyesight will improve more between the 4<sup>th</sup> and 5<sup>th</sup> minute than between the 6<sup>th</sup> and the 7<sup>th</sup> minute.
- (A) Only statement I can be deduced.  
(B) Only statement II can be deduced.  
(C) Both statements can be deduced.  
(D) Neither of the two statements can be deduced.

Subtest: Analyzing Texts

**Working time in the original test for 15 items: 30 minutes**

The following items are to test your ability to comprehend the contents of brief texts from the fields of medicine and sciences, and to draw the correct conclusions. For each item, select the correct answer from the proposed solutions (A) to (D) and mark the corresponding letter on the answer sheet.

- 01.** Cushing's syndrome is a disease characterized by an increased concentration of the hormone cortisol in the blood. In a healthy patient, the hormone ACTH, which is produced in the anterior pituitary gland and released into the blood, is transported to the adrenal glands where it causes - via various intermediate steps - the formation of cortisol out of cholesterol. Amongst others, cortisol has an activating effect on the melanocytes that produce the browning pigment of the skin. Cortisol is transported by the blood to the anterior pituitary gland, where it inhibits the production of ACTH.

Which of the following statements on a patient suffering from Cushing's syndrome due to a cortisol-producing tumour in the adrenal glands can be deduced from this information?

- I. The skin of the patient shows comparatively strong pigmentation.
  - II. The blood of the patient shows an increased ACTH concentration.
- (A) Only statement I can be deduced.
  - (B) Only statement II can be deduced.
  - (C) Both statements can be deduced.
  - (D) Neither of the two statements can be deduced.



- 02.** In physiology, "dead space" is that part of the respiratory passages (airways) which does not participate in the gas exchange, i.e. it does not take up oxygen and does not release carbon dioxide. The trachea (air tube) and the nasopharynx (nose and mouth) are part of it. During inhalation, only part of the air reaches the lungs, where the gas exchange occurs. The rest stays in the dead space. During expiration, the air which is in the dead space from the previous breath is exhaled first, before the air from the lungs is exhaled. During inhalation, on the other hand, the air from the dead space reaches the lungs first before fresh air enters the airways. The volume of the dead space comprises approximately 30 percent of the "breathing volume" of a healthy adult. The respiratory volume per minute is the product of "breathing volume" and "respiratory rate".

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

- I. People with a large dead space release – on the average – less carbon dioxide than people with a smaller dead space.
  - II. The oxygen and carbon dioxide content of the air exhaled from the dead space is approximately equal to that of fresh air.
- (A) Only statement I can be deduced.
  - (B) Only statement II can be deduced.
  - (C) Both statements can be deduced.
  - (D) Neither of the two statements can be deduced.

- 03.** The conventional blood group system differentiates between the four blood groups A, B, AB and 0. The surface of the red blood cells (RBCs) of blood group A has antigens of type A; the surface of the RBCs of blood group B has antigens of type B, and the surface of RBCs of blood group AB has antigens of type A and antigens of type B. The surface of RBCs of blood group 0 does not have any antigens.
- The blood serum of a person contains antibodies against all antigens that are not part of the respective person's RBCs. For example, the serum of humans with blood group B contains antibodies against the A antigen (anti-A serum).
- Antibodies cause clumping/agglutination of RBC's of the corresponding antigens they are directed against. To determine the blood group, one drop each of the blood to be examined is mixed with anti-A serum, with anti-B serum and with anti-AB serum, respectively.

Which of the following statements on possible test results can be deduced from this information?

- I. When mixing blood of blood group A with anti-B serum, agglutination will occur.
  - II. When mixing blood of blood group 0 with anti-AB serum, agglutination will occur.
- (A) Only statement I can be deduced.
  - (B) Only statement II can be deduced.
  - (C) Both statements can be deduced.
  - (D) Neither of the two statements can be deduced.

Subtest: Solving Quantitative Problems

**Working time in the original test for 15 items: 34 minutes**

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

Example:

A student works in a factory during holidays. He is paid a wage of 10 Euros an hour. He works 8 hours a day and 5 days a week. How much has he earned after four 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

Please mark the correct answer (A, B, C or D) on your answer sheet.

- 01.** With a certain pharmaceutical drug, children are only administered a fraction of the adult dose. When multiplying the age of the child by 4 and adding 20, this will result in the daily dose for the child, expressed as a percentage of the daily adult dose.

Let's assume that the daily adult dose is 3 x 2 pills, each with 200 mg of active substance. What is the single dose for a five-year-old child that is supposed to receive four equal administrations per day.

- (A) 60 mg of active substance
- (B) 90 mg of active substance
- (C) 120 mg of active substance
- (D) 180 mg of active substance

**Example Items "Solving Quantitative Problems"**

- 02.** Julian has agreed to give a talk in three courses. The creation of the three scripts will take different amounts of time. When creating two scripts one after the other without a break, he will need the following time periods: 13 hours for the talks 1 and 2; 17 hours for the talks 2 and 3; and 24 hours for the talks 1 and 3.

How much time will he need for the most time-consuming talk out of the three talks?

- (A) more than 14 hours
- (B) 14 hours
- (C) 13 hours
- (D) less than 13 hours

- 03.** A private hospital is divided into ward A and ward B. Ward A houses 40 % of the hospital beds; it generates 60 % of the total turnover of 120 million Euros and 50 % of the profit of 8 million Euros.

Let us assume that the number of hospital beds in ward B is increased by 20 % of its current number of hospital beds, with the number of beds of ward A being reduced correspondingly; the turnover per bed stays the same in both wards.

Which share in the total turnover applies to ward A after such a change?

- (A) 42.0 %
- (B) 46.7 %
- (C) 48.0 %
- (D) 53.3 %

Subtest: Identifying Rules

**Working time in the original test for 15 items: 22 minutes**

Each of the following items consists of nine fields. Eight of the fields contain figures. The arrangement of the figures has been carried out according to certain rules. Your task is to identify these rules and apply them in order to find the ninth figure.

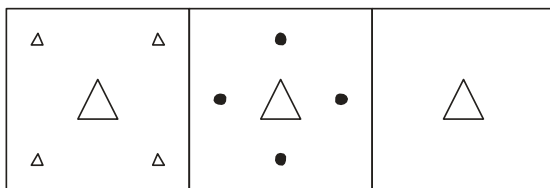
Below the nine fields, you will find eight figures (A, B, C, D, E, F, G and H). Select the figure which should take the place of the question mark.

The rules apply

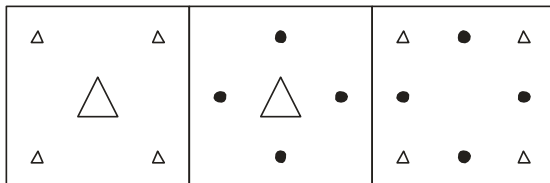
- from left to right (horizontally),
- **OR** from top to bottom (vertically),
- **OR** from left to right **AND** from top to bottom.

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

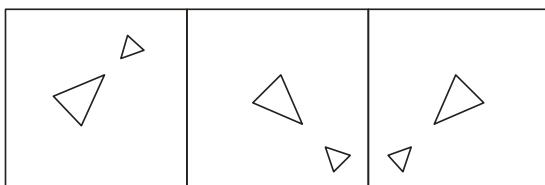
In order to solve an item, you have to identify one, two or three rules. It is also possible that one rule applies horizontally and another rule vertically. In the following you will find some rules that may apply to the item:



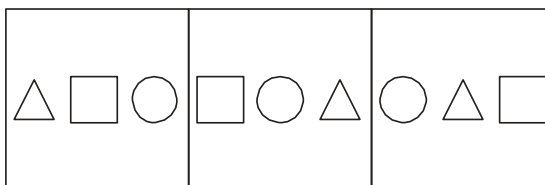
Identical elements remain  
Different elements are eliminated



Different elements remain  
Identical elements are eliminated



Elements change their position  
Elements change their orientation

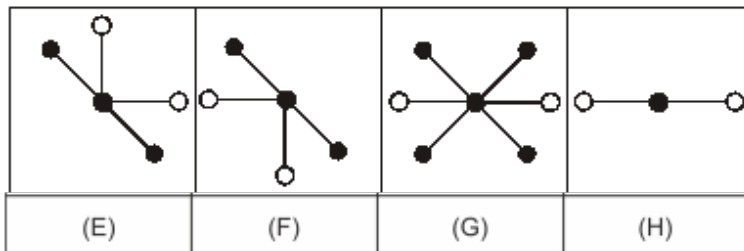
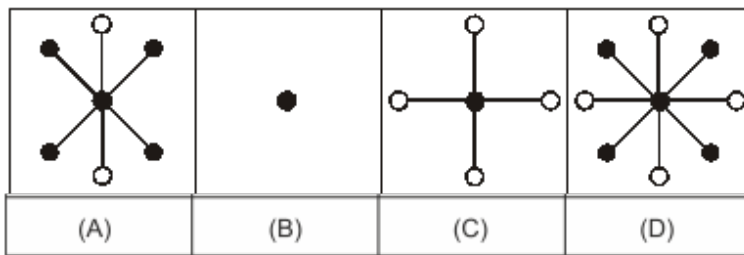
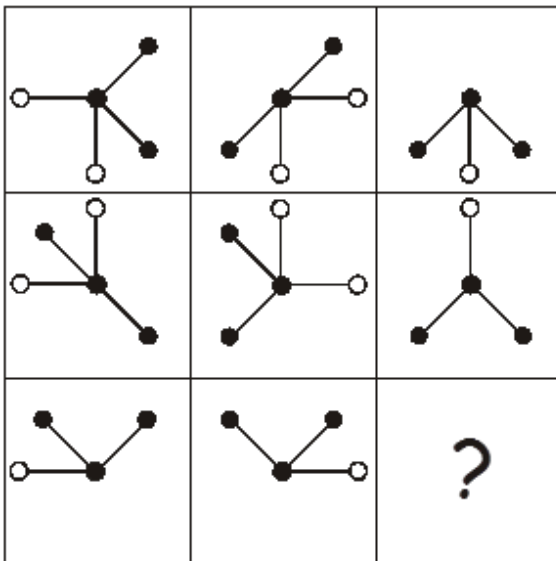


Shapes vary



Example Items "Identifying Rules"

02.



Example Items "Identifying Rules"

03.

(A)	(B)	(C)	(D)

(E)	(F)	(G)	(H)

## SOLUTIONS AND APPROACHES

## Solutions

<b><i>Subtest: Analyzing Graphs and Tables</i></b>		
<b>Item 1</b>	<b>Item 2</b>	<b>Item 3</b>
B	A	C

<b><i>Subtest: Analyzing Texts</i></b>		
<b>Item 1</b>	<b>Item 2</b>	<b>Item 3</b>
A	B	D

<b><i>Subtest: Solving Quantitative Problems</i></b>		
<b>Item 1</b>	<b>Item 2</b>	<b>Item 3</b>
C	B	B

<b><i>Subtest: Identifying Rules</i></b>		
<b>Item 1</b>	<b>Item 2</b>	<b>Item 3</b>
G	B	H



## Approach to the “Analyzing Graphs and Tables“ Subtest

### Item 1

Level of difficulty: low

Explanation:

**Statement I** can easily be disproved. When the initial temperature is 30 °C, a decrease in the skin temperature by less than 0.2 °C already leads to the perception “getting colder”, and thus to a perceived change in temperature.

**Statement II**, on the other hand, can be deduced: When the initial temperature is 32 °C, an increase in skin temperature by 0.5 °C is slightly above the threshold to the perception “getting warm”.

The correct solution to this item is therefore **(B)**.

### Item 2

Level of difficulty: medium

Explanation:

The **first statement** can be deduced. It is a statement about two values which can both be taken directly from the graph: the number of persons who fell ill on November 15, and the number of cases reported to the health authorities on November 15. With regard to the first number, the graph shows clearly that on November 15 the curve is above the value 25. With regard to the second number, the graph also shows clearly that the respective curve is below the value 4 on November 15.

**Statement II** also seems, at first glance, to be a simple comparison of two values: the number of persons who fell ill on October 16 and the number of persons who were admitted to hospital on October 16. If we take a closer look, however, it becomes clear that the statement is not about the persons who were hospitalised exactly on October 16, but about those who fell ill on October 16 and were later admitted to hospital (either on the same day or – probably more frequently – on one of the following days). The fact that the apexes of the two curves showing “Cases” and “Hospitalisations” differ by about 14 days shows that in most cases several days passed between the time the person fell ill and the time he was admitted to hospital. Even if we do not consider that fact, it is clear that the number of persons hospitalised on October 16 does not by any means necessarily have to be a subset of the persons who fell ill on that day. Therefore statement II cannot be deduced.

The correct solution to this item is therefore **(A)**.

### Item 3

Level of difficulty: high

Explanation:

The correct solution to this item is **(C)**; in other words, both statements can be deduced from the information given in the text and the graph.

**Statement I** describes the situation in which the rod mechanism fails. According to the text, the dashed line of the "cone curve" shows how the vision performance develops under changing light conditions when the rod mechanism fails. Therefore we must look at the "cone curve". Between a luminance of  $1 \text{ cd/m}^2$  and a luminance of just under  $0.01 \text{ cd/m}^2$  ( $10^{-2}$ ), the "cone curve" drops – very rapidly at first and then more and more gradually. From then on, however (after about 10 minutes of adaptation time and clearly above the luminance of  $0.005 \text{ cd/m}^2$  referred to in the statement), it runs parallel to the x-axis. This means that, no matter how long the adaptation time is, the vision performance no longer improves.

**Statement II** is about the performance of cone vision. Since here we are talking about a person with normal eyesight, we need only to look at the continuous black curve when we think about whether or not the statement is correct. And in fact, the continuous section of the "cone curve" drops very rapidly at first, but then – from about the fifth minute onwards – more and more gradually, and between the seventh and eighth minute it merges almost asymptotically with the x-axis. Only then (when "rod vision" sets in), does the curve once again drop rapidly. This means that in the time period between the 4<sup>th</sup> and 5<sup>th</sup> minute, the vision performance of a person with normal eyesight indeed improves more than in the time period between the 7<sup>th</sup> and 8<sup>th</sup> minute. (As the luminance decreases, the cone vision performance can be said to "stagnate" in a sense.)

## Approach to the "Analyzing Texts" Subtest

### Item 1

Level of difficulty: low

Explanation:

**Statement I** can be deduced from the text: the concentration of cortisol in the patient's blood is increased due to a cortisol-producing tumour. As a result, the melanocytes – which produce the browning pigment of the skin – are activated to an increased level of production. The patient's skin therefore shows comparatively strong pigmentation.

**Statement II** cannot be deduced from the text: the increased cortisol concentration in the patient's blood inhibits the production of ACTH. As a result, the ACTH concentration in the blood is decreased and not increased.

The correct solution to this item is therefore **(A)**.

### Item 2

Level of difficulty: medium

Explanation:

**Statement I** cannot be deduced from the text: the amount of carbon dioxide released during expiration is unrelated to the size of the dead space because the dead space does not participate in the gas exchange.

**Statement II** can be deduced from the text: according to the text, when a person exhales, the air which is in the dead space from the previous inhalation is exhaled first. Since no exchange of gas takes place in the dead space, this air is similar in content to the fresh air inhaled previously.

The correct solution to this item is therefore **(B)**.

**Item 3**

Level of difficulty: high

Explanation:

To understand this item, it may help to make a sketch of the circumstances described. Such a sketch, for example, could look like this:

<b>Blood group</b>	<b>A</b>	<b>B</b>	<b>AB</b>	<b>0</b>
Antigens on RBCs	type A	type B	type A and type B	-
Antibodies in serum	against B	against A	-	against A and against B

You can now read the solutions directly from this sketch:

**Statement I cannot** be deduced from the text: the red blood cells of blood group A have only antigens of type A on their surfaces. If this blood is mixed with anti-B serum, which contains antibodies against antigens of type B, no agglutination will occur. Statement I is therefore not correct.

**Statement II can also not** be deduced from the text: the red blood cells of blood group 0 have no antigens on their surfaces. If this blood is mixed with anti-AB serum, which contains antibodies of antigens of type A and type B, no agglutination will occur.

The correct solution to this item is therefore **(D)**.

## Approach to the "Solving Quantitative Problems" Subtest

### Item 1

Level of difficulty: low to medium

Explanation:

If we multiply the child's age (5 years) by 4 and then add 20, the resulting value is 40. The daily dose for the child is therefore 40 % of the daily dose for an adult.

The daily dose for an adult is 1,200 mg of active substance (3 x 2 x 200 mg). For the five-year-old child, the daily dose is therefore 480 mg of active substance (40 per cent of 1,200 mg). If we divide the daily dose of 480 mg by four to receive four equal administrations, we arrive at a single dose of 120 mg of active substance.

The correct solution to this item is therefore **(C)**.

### Item 2

Level of difficulty: medium to high

Explanation:

If we name the times for the creation of the three scripts T1, T2 and T3, we have the following three equations:

$$T1 + T2 = 13 \text{ hours}$$

$$T2 + T3 = 17 \text{ hours}$$

$$T1 + T3 = 24 \text{ hours}$$

It is already clear from these equations that the script for talk 3 is the one that will be the most time-consuming to create. Therefore we will begin by solving the first equation for T1 ( $T1 = 13 - T2$ ) and the second equation for T2 ( $T2 = 17 - T3$ ).

If we enter these two equations into the third equation ( $T1 + T3 = 24$  hours), the result is  $13 - (17 - T3) + T3 = 24$  hours.

If we solve this equation for T3, we come to the conclusion that it will take 14 hours to create the script for talk 3. The correct solution to this item is therefore **(B)**.

**Item 3**

Level of difficulty: high

Explanation:

If the number of hospital beds in ward B is increased by 20 %, this number rises from 60 % to 72 % of the total number of beds. In ward A, the percentage share accordingly decreases from 40 % to 28 % of the total number of beds.

The turnover of ward B therefore rises from 40 % to 48 % of the previous total turnover and the turnover of ward A decreases from 60 % to 42 % of the previous total turnover

( $28 \% : 40 \% = x : 60 \% \quad x = 42 \%$ ).

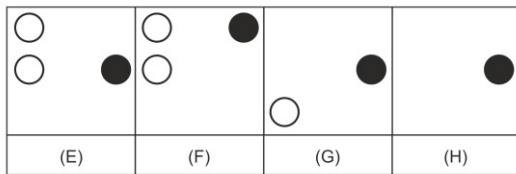
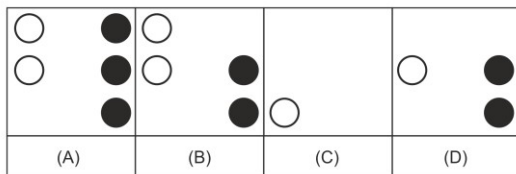
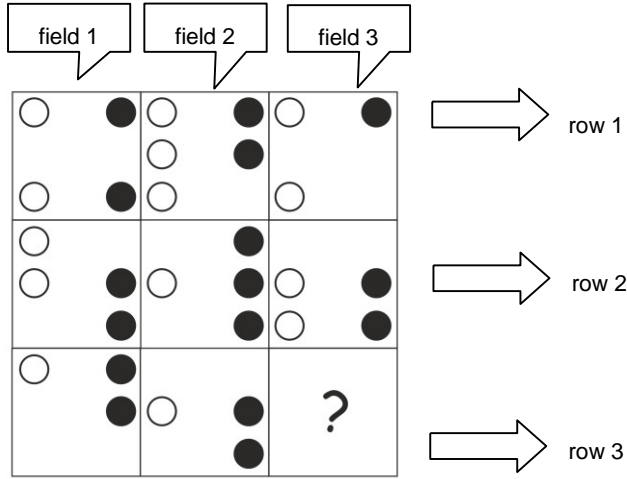
After the change, the total turnover amounts to only 90 % of the total turnover before the change (48 % + 42 %). After the change, ward A therefore accounts for 46.7 % of the total turnover (42 % of 90 %).

The correct solution to this item is therefore **(B)**.

Approach to the "Identifying Rules" Subtest

**Item 1:**

Level of difficulty: low



Two different rules apply:

**The white circles:** Please look at the first column. In all three rows, there is a white circle in the upper left corner. The other white circles seen in field 1 of the rows 1 and 2 do not turn up again in field 1 of row 3. In column 2 the same applies: in all rows there is a white circle at medium height on the left. The other white circles in field 2 of row 1 are not seen in row 2 and row 3. The rule that can be deduced for the white circles is: identical elements remain. This rule applies vertically.

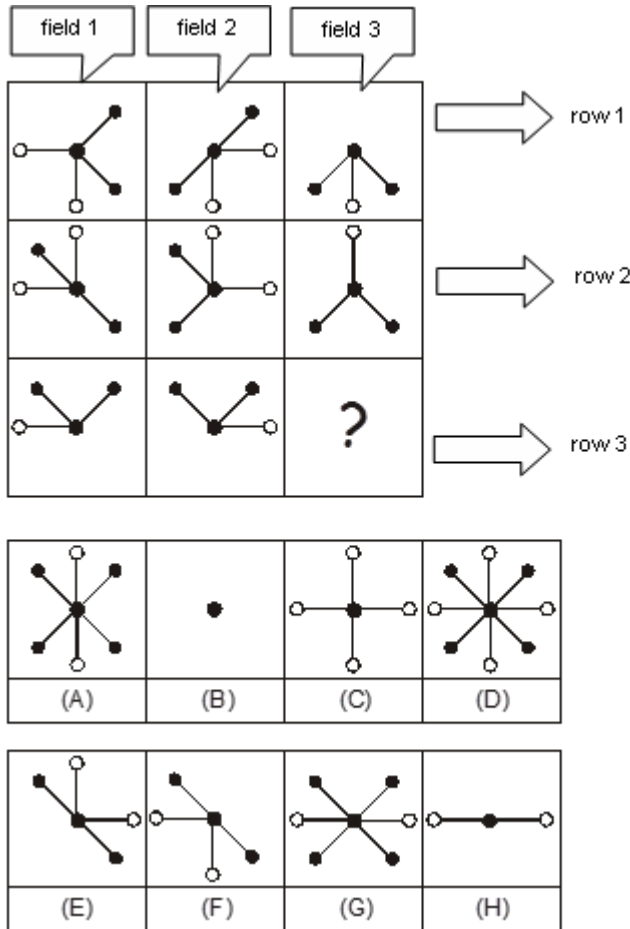
**The black circles:** Look at row 1. In all three fields, there is a black circle in the upper right corner. The other black circles in field 1 and field 2 of row 1 do not turn up again in field 3 of row 1. In row 2, the same two black circles can be seen in all three fields; an additional black circle is seen only in field 2 of row 2. The rule that can be deduced for the black circles is: identical elements remain. This rule applies horizontally.

In field 3, row 1 and row 2 both have a white circle in the lower left corner. In row 3, field 1 and field 2 both have a black circle at medium height on the right. These two circles together make up the solution.

Therefore the solution is **(G)**.

Item 2:

Level of difficulty: medium



Two different rules apply:

**The lines with the coloured-in circles:** A line appears in field 3 if it is not in the same position in field 1 and field 2. Please look at row 1. The line with the circle at the top right appears in field 1 and field 2. It does not appear in field 3. The line with the circle at the bottom right appears only in field 1, and the line with the circle at the bottom left appears only in field 2. In field 3 is a line with a circle at the bottom left and a line with a circle at the bottom right. Identical lines cancel each other out!

**The lines with the blank circles:** A line appears in field 3 if it is in the same position in field 1 and field 2. Please look at row 1. In field 1 there is a line with a circle at the left. In field 2 there is a line with a circle at the right. In both fields there is a line with a circle at the bottom. In field 3, only the line with the circle at the bottom appears. Differing lines cancel each other out!

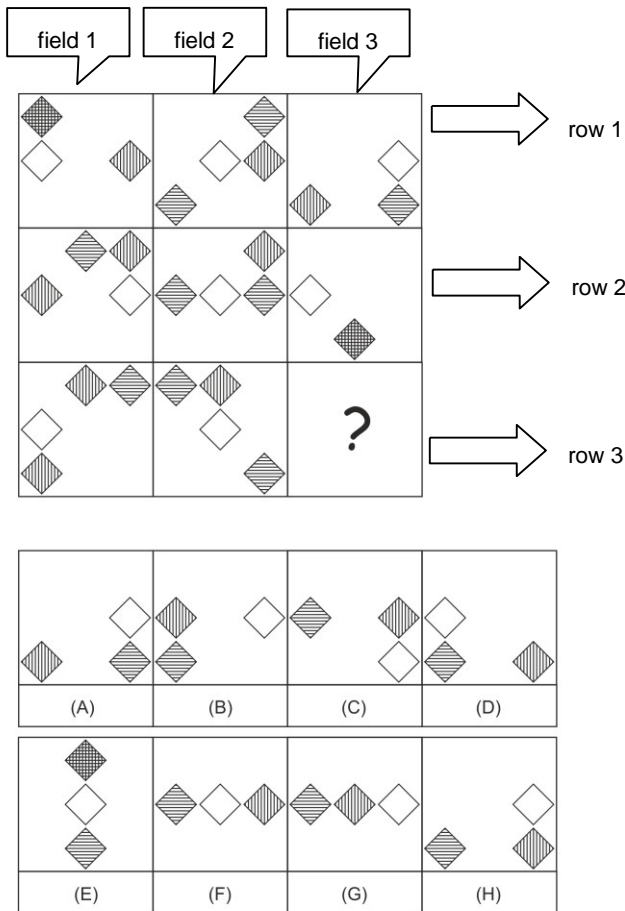
In field 1 and field 2 of row 3, both lines with coloured-in circles are in the same position, so they cancel each other out. In field 3 there is accordingly no line with a coloured-in circle. The lines with blank circles are not in the same position in field 1 and field 2 so – as differing lines – they also cancel each other out.

This means: No lines with coloured-in circles, and no lines with blank circles.



**Item 3**

Level of difficulty: high



Three different rules apply:

**The white diamonds:** Look at row 1. In all three fields there is a white diamond at medium height. In field 1, the diamond is on the left, in field 2 it is at the centre, and in field 3 it is on the right. In row 2, the white diamonds are also at medium height and distributed over three positions: in field 1 the diamond is on the right, in field 2 it is at the centre, and in field 3 it is on the left. The rule that can be deduced for the white diamonds is: the diamonds appear at medium height and are positioned once at the centre, once at the left and once at the right. This rule applies horizontally.

**The horizontally striped diamonds:** Look at column 1. In the first field, we see a horizontally and a vertically striped diamond on top of one another, i.e. in the same position, in the upper left corner. In field 1 of row 2, the horizontally striped diamond has moved one position to the right. In field 1 of row 3, the horizontally striped diamond has moved one more position to the right, and is now in the upper right corner. The rule that can be deduced for the horizontally striped diamonds is: the diamonds move to the next position in clockwise direction. This rule applies vertically. The rule is confirmed in the

**The vertically striped diamonds:** Look at column 1. In the first field, we see a horizontally and a vertically striped diamond on top of one another, i.e. in the same position, in the upper left corner. In field 1 of row 2, the vertically striped diamond has moved down one position. In field 3 of column 1, this diamond has moved down again, and is now at the bottom left. In the first field of row 1, a second vertically striped diamond is seen at medium height on the right. In field 1 of row 2, this diamond is in

### *Approach to the "Identifying Rules" Subtest*

the upper right corner, and in field 1 of row 3 it is at the top centre. This is exactly the pattern followed by the vertically striped diamond in the three rows of column 2. The rule that can be deduced for the vertically striped diamonds is: the diamonds move to the next position in a counter-clockwise direction. This rule applies vertically.

In fields 1 and 2 of row 3, the white diamond is seen at the left and at the centre. So in the missing field, there has to be a white diamond at the right centre. In field 3 of row 2, the horizontally and vertically striped diamonds are seen on top of one another at the bottom centre. Therefore, the missing field has to have a horizontally striped diamond in the lower left corner and a vertically striped diamond in the lower right corner.

Therefore the solution is **(H)**.