**Buyer: Mai Phan (mai.dmcasiaplus@gmail.com) Transaction ID: jg-p6i4de6c0feaee4**

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CORE TEST

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**FOREWORD**

The surest way to a fulfilling and exciting career is to begin your journey with an equally fulfilling and exciting but rigorous education. I began my studies in business at the Ludwig- Maximilians Universität in Munich and the Universität Augsburg and complemented this experience with internships. By combining strong academics with rich professional experiences, I was able to realize my dream of working in the United States and gaining a global perspective on the world economy.

Now with our Munich-based company edulink, we provide college admission counselling over the internet to young men and women who are looking for exceptional educational experiences in Germany. Let’s face it. Navigating the university application process can be complicated, especially for students who are not familiar with German universities. Our company makes this process easier for you by providing you with professional advice and strategies for preparing a successful university application.

Due to the highly competitive nature of German-language universities, one of the stumbling blocks for many students is the TestAS exam, an aptitude test for university applicants from non-European countries. The TestAS is one of the criteria used to determine a student’s readiness for university level courses in Germany. We created the preparation books to help students take these exams with confidence.

Our goal in writing these books was to give you a complete overview of and a feel for the TestAS exam. These study guides were developed after detailed research with a team who has taken the exams. We have also interviewed dozens of prior test takers to identify the areas where students need the most help. We hope that our preparation books will help you approach the TestAS exam with confidence.

An advanced degree from a German university will pave the way for new opportunities and exciting career paths. I sincerely hope that our test preparation books will help many eager students find fulfilling educational opportunities in Germany.

All the best,

Peter

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**Peter Bauschmid, Özveri Bauschmid**

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Edition 6 April 2017

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1 ABOUT TESTAS

1.1 WHO SHOULD TAKE THE TESTAS?

TestAS is a standardized test for high school graduates from outside the European Union who would like to study for their bachelor’s degree in Germany.

An increasing number of universities in Germany use the Test for Academic Studies (TestAS) as part of their evaluation criteria. They use the test as part of the admissions process and combine the results with other criteria during selection.

The TestAS may be taken either in German or English.

1.2 WHICH UNIVERSITIES ACCEPT TESTAS RESULTS?

In the following, you will find a list of universities (as of February 2017) which recognise this test for foreign students. This list is without guarantee due to the fact that the TestAS and its acceptance at German universities is continuously changing and expanding. Please refer to the websites of the universities for up-to-date information.

In most cases, taking the test as part of the application process is voluntary. In these cases, the participant can decide whether or not the results should be made available to the university on an individual basis (if the results are not as high as desired).

If you have a higher than average TestAS result, the university entrance qualification (HZB) score may be increased. More information about the HZB score can be found online, e.g. at the website of uni-assist e.V.: http://www.uni-assist.de/wissenswertes.html

The test is normally only relevant for non-EU applicants who have not received their HZB score in Germany and who are applying for a Bachelor’s programme in Germany.

**FOR THE FOLLOWING UNIVERSITIES, TESTAS PARTICIPANTION IS MANDATORY FOR SPECIFIC FIELDS OF STUDY:**

The **University of Cologne** only accepts applications (**except in the case of law and teaching education programmes**) which contain TestAS results. The TestAS certificate must be submitted along with the application documents and sent to uni-assist e.V.

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Applicants must achieve a specific standard score within the TestAS in order to be able to apply. We have listed a few such examples below (as at 03.02.2017). Additional and more up-to-date information can be found on the website of the University of Cologne.

○ When applying for the Faculty of Medicine, the average score required for the core test and the specialist module on Mathematics, Information Technology and Natural Sciences is 108.

○ When applying for the Faculty of Economic and Social Sciences, the average score required for the core test and the specialist module on Economics is 108.

○ When applying for law of for any teacher training programmes, the TestAS is currently not required.

Source: http://international.uni-koeln.de/6944.html; last accessed on 03.02.2017.

The **RWTH Aachen University** requires participants to take the TestAS if the participant is applying for the fields of **Human Medicine** or for the **Fast Track Bachelor Admission Programme** for **Engineering**. In the case of Human Medicine, the exam must be taken in German and must include the specialist module “Mathematics, Information Technologies and Natural Sciences” in addition to the core test. In the case of Fast Track Engineering, the specialist module on Engineering Sciences must be taken.

Source: http://www.rwth-aachen.de/cms/root/Studium/Vor-dem- Studium/Studiengaenge/Liste-Aktuelle- Studiengaenge/Studiengangbeschreibung/~bncp/Medizin-Modellstudiengang- Staatsexamen/ ; last accessed on 03.02.2017.

The **University of Bremen** only accepts applications for **business programmes** (Business Administration and Economics) when they include the TestAS results.

When applying to other fields of study, the TestAS is voluntary. A significantly higher grade can be achieved by taking the voluntary TestAS. If a participant’s percentile rank within the core test is at least 50%, then the HZB score of the participant is raised by 0.3 points. If the participant achieves a percentile rank of at least 50% in the specialist module, then an additional 0.3 is awarded.

Source: http://www.uni-bremen.de/international/wege-an-die-universitaet- bremen/grundstaendiges-studium-bewerbung.html ; http://www.uni- bremen.de/fileadmin/user\_upload/single\_sites/sfsi/Notenverbesserung\_TestAS.pdf; last accessed on 02.02.2017.

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For **Human Medicine** applications at the **Otto von Guericke University of Magdeburg,** the taking of the TestAS (core test and specialist module on Mathematics, Information Sciences and Natural Sciences test) is mandatory. The exam has to be taken in German.

To select applicants, this university applies a ranking procedure that takes into account HZB and TestAS scores. Further detailed information can be found under Paragraph 7, Point 5: http://www.bekanntmachungen.ovgu.de/media/Archiv+\_+Amtliche+Bekanntmachungen/2 016/28\_2016+Satzung+zur+Durchf%C3%BChrung+des+Hochschulauswahlverfahrens+f%C 3%BCr+ausl%C3%A4ndische+Studienbewerberinnen+und+Studienbewerber+f%C3%BCr+ den+Studiengang+Medizin.pdf.

Source: https://www.med.uni-magdeburg.de/aaaZulassung.html; last accessed on 09.02.2017.

The **University of Greifswald** has made the taking of the TestAS mandatory for applications to the study programme of **Human and Dental Medicine**. To apply, the university requires a score of at least 100 points on the core test.

Source: https://www.uni-greifswald.de/fileadmin/uni- greifswald/1\_Universitaet/1.2\_Organisation/1.2.5\_Satzungen\_und\_Formulare/Satzungen/St udium\_und\_Pruefungen/Satzung\_Auswahlvf\_Ausl.pdf; last accessed on 03.02.2017

**UNIVERSITIES WHERE APPLICANTS CAN GREATLY IMPROVE THEIR HZB SCORE DUE TO GOOD RESULTS (MORE THAN 0.5 “ABITUR” SCORE):**

The **University of Hamburg** awards a significant number of bonus points based on the TestAS results. The following website shows an overview chart available for the bonus points system: https://www.uni-hamburg.de/campuscenter/studienorganisation/formulare- informationsmerkblaetter/zulassungskriterien-bewerbung-nicht-eu.pdf

Source: https://www.uni-hamburg.de/campuscenter/bewerbung/international/studium-mit- abschluss/studierfaehigkeitstest.html; last accessed on 03.02.2017

The **Johannes Guttenberg University of Mainz** awards bonus points for the HZB score based on the TestAS results. The most recently taken TestAS is the one that applies. The level of bonus points available (up to 0.5 for the core test and up to 0.5 for the specialist module) can be found here: https://www.studium.uni-mainz.de/testas/

Source: https://www.international.uni-mainz.de/studierfaehigkeitstest-testas/; last accessed on 03.02.2017.

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**UNIVERSITIES WHERE APPLICANTS CAN INCREASE THEIR CHANCES OF ACCEPTANCE WITH GOOD RESULTS:**

The **University of Heidelberg** uses the TestAS as a minor voluntary part of their acceptance criteria.

Source: http://www.uni-heidelberg.de//studium/interesse/int\_bewerbung/unterlagen.html ; http://www.uni-heidelberg.de/md/studium/interesse/int\_bewerbung/verfahren/2012-04- 23\_aktuelleinfo2012-13\_internet.pdf; last accessed on 03.02.2017.

At the **Dresden University of Technology** (TU Dresden), the TestAS results are used as additional proof of ability for applications to the study programmes of **Human** and **Dental Medicine**.

Source: https://tu-dresden.de/med/mf/studium/angebot/bewimma/adh\_nicht-eu; last accessed on 03.02.2017

The **University of Ulm** adds bonus points to the HZB average score based on the TestAS results for a standard score of at least 100. The HZB score can be improved by up to 0.5 points.

○ Standard score below 100 → No bonus

○ Standard score between 100 and 110 → Bonus of 0.2

○ Standard score between 111 and 120 → Bonus of 0.3

○ Standard score above 121 and 130 → Bonus of 0.5

Source: https://www.uni-ulm.de/fileadmin/website\_uni\_ulm/zuv/zuv.dezIII.abt2u3/3- 2oeffentlich/bekanntmachungen/2015/zulassung\_immaO\_2015.pdf; last accessed on 03.02.2017.

The **University of Freiburg** awards bonus points based on TestAS results. No additional information has yet been made available.

Source: http://www.studium.uni-freiburg.de/studienbewerbung/international/vollzeitstudium; last accessed on 03.02.2017.

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The **University of Göttingen** uses the TestAS as a voluntary part of their acceptance criteria. Participation in the **TestAS for the subject of Natural Sciences** may increase your chances of being accepted.

Source: https://www.uni-goettingen.de/de/511340.html; last accessed on 03.02.2017.

The **University of Leipzig** adds bonus points to the HZB score based on TestAS results if the participant achieves a percentile rank of at least 70%. For a percentile rank higher than 70%, there is a bonus of 0.2. For similar results within the specialist module, an additional 0.2 bonus points are awarded.

Source: https://www.zv.uni-leipzig.de/studium/studium-international/internationale- bewerber/bachelor-staatsexamen-diplom/testas.html; last accessed on 03.02.2017.

The **University of Potsdam** takes “good” TestAS results into consideration by awarding such applicants an edge over other applicants with the same qualifications and no TestAS results.

Source: https://www.uni-potsdam.de/studium/zugang/vor-bewerbung- immatrikulation/studienvorbereitende-kurse/; last accessed on 03.02.2017.

The **University of Regensburg** takes the TestAS results into consideration for programmes in **Economic Sciences**. By submitting the TestAS results along with the application, the applicant can improves his/her chances of a place at the University of Regensburg.

Source: http://www.uni-regensburg.de/zentrum-sprache- kommunikation/daf/pruefungen/testas/; last accessed on 03.02.2017.

The **Berlin School of Economics and Law** gives out bonus points depending on the test results achieved by applicants for **Economic Sciences**.

Source: http://www.hwr-berlin.de/fachbereich- wirtschaftswissenschaften/bewerbung/auswahl-und-einstufungstests/testas/; last accessed on 03.02.2017.

The **University of Applied Sciences Mittweida** assesses an application positively when a TestAS certification is submitted alongside it.

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Source: https://www.studium.hs-mittweida.de/bewerbung/bewerbung-fuer-auslaendische- studieninteressenten.html; last accessed on 03.02.2017

The **Technical University of Telecommunications and Informatics Leipzig** (HfTL) uses the TestAS as a voluntary part of their application criteria.

Source: https://www.hft-leipzig.de/no\_cache/en/international- office.html?cid=12308&did=7194&sechash=42b50bd1; last accessed on 03.02.2017.

**UNIVERSITIES WHICH ACCEPT THE TESTAS AS A PROOF OF ABILITY (ADDITIONAL DOCUMENTS ARE REQUIRED):**

The **University of Wuppertal** (BUW) accepts good TestAS results as proof of suitability for a Bachelor’s programme and, in such cases, does not require the standard university entrance qualification documents such as a high school diploma. It requires a standard score of at least 76 on the TestAS core test 76 and at least 83 on the specialist module.

Source: http://www.internationales.uni- wuppertal.de/fileadmin/internationales/files/Allgemeine\_Informationen.pdf; last accessed on 03.02.2017.

The **Technical University of Hamburg** (TUHH) makes it possible for students with above- average TestAS results to apply for a technical subject that deviates from their HZB score. The applicant must have an adequate HZB score for study programmes in Engineering Sciences and their overall test result for the core test and specialist module in Engineering Sciences must be at least 100 points. Then, the subject-specific HZB may be expanded to a general HZB for the TUHH bachelor programmes.

Example:

“An applicant has university entrance qualification for electrical engineering, but would prefer to study civil and environmental engineering. They have passed the TestAS (core test + specialist module in Engineering Sciences) with an overall result of 106. The applicant is thus awarded the university entrance qualification for civil and environmental engineering on the part of TUHH.” (Quoted from the TUHH website listed below)

Source: https://www.tuhh.de/tuhh/studium/bewerbung/bachelorstudiengaenge/bewerberinne n-mit-nicht-deutschem-abitur.html; last accessed on 03.02.2017.

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The **Frankfurt School of Finance & Management** accepts applications containing one of the following tests: TestAS, ACT or SAT.

Source: http://www.frankfurt- school.de/content/en/education\_programmes/education\_advisory/application-admission- bachelor.html; last accessed on 03.02.2017.

The **Goethe University in Frankfurt am Main** uses the TestAS as a voluntary part of their acceptance criteria for the one-semester programme “**Academic Welcome Program for Highly Qualified Refugees”**.

Source: https://www.uni-frankfurt.de/60148516/03-Auswahlverfahren; last accessed on 03.02.2017.

Additionally, there are universities such as the **Augsburg University,** which recommend taking the TestAS but do not take the results into consideration as part of the application process. (Source: https://www.hs-augsburg.de/fakultaet/aw/zsi/kod/testas/index.html ; last accessed on 03.02.2017.) A further example of this is the **University of Applied Sciences Berlin**. (Source: https://www.htw-berlin.de/international/internationale-htw- studierende/bewerbung-mit-auslaendischen-zeugnissen/test-fuer-auslaendische- studierende/ ; https://www.htw-berlin.de/fileadmin/HTW/Zentral/ZHV\_IIIB\_- \_Zulassung\_und\_Immatrikulation/Bewerbungsunterlagen\_internationale\_Bewerber.pdf; last accessed on 03.02.2017.)

For up-to-date information on whether and how the TestAS results are integrated into the application process, please visit the universities’ websites.

1.3 WHAT ARE THE DIFFERENT SECTIONS OF THE TEST?

The TestAS exam consists of 2 parts:

○ a Core Test lasting 110 minutes and assessing skills necessary for successful studies in all university-level subjects, and

○ a Subject-Specific Module pertaining to your chosen field of study and lasting 145- 150 minutes.

This book focuses on the Core Test.

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CORE TEST

The Core Test tests general skills which are required to study at a university. The four subcategories of the Core Test are:

○ Solving quantitative problems

○ Inferring relations

○ Completing patterns

○ Continuing numerical series

1.3.1 SOLVING QUANTITATIVE PROBLEMS

22 questions, 45 minutes test time

In these questions, brief texts are given from which relevant information must be derived for the subsequent questions. These questions measure mathematical thinking and the ability to solve simple calculations using the information given.

**EXAMPLE – DEGREE OF DIFFICULTY LOW**

A city has 1,500,000 inhabitants in 2015 and grows at the same rate for several years. If the city has 1,650,000 inhabitants in 2018, how many inhabitants will the city have in 2021 if the growth rate does not change?

(A) approx. 1,800,000

(B) approx. 1,815,000

(C) approx. 2,145,000

(D) approx. 2,240,000

**Answer B:** approx. 1,815,000 inhabitants

**Approach:** The 1,500,000 inhabitants grew 10% in 3 years. → 1,650,000 × 1.1 = 1,815,000.

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1.3.2 INFERRING RELATIONS

22 questions, 10 minutes test time

In these questions, two word pairs with blanks are given which have a relationship. From the answer options, a word pair must be chosen which most logically completes the word pairs.

**EXAMPLE – DEGREE OF DIFFICULTY LOW**

**body** : \_\_\_\_\_\_\_\_\_\_\_ = **hand** : \_\_\_\_\_\_\_\_\_\_\_

(A) arm – finger

(B) head – stomach

(C) leg – shoulder

(D) skin – ear

**Answer: A**

**Approach:** The arm is a part of the body, and the finger is a part of the hand.

1.3.3 COMPLETING PATTERNS

22 questions, 20 minutes test time

In these questions, patterns are shown in eight out of nine smaller boxes displayed in a square. The task here is to select the correct pattern from the answer options for the ninth box in order to create a logical order. The pattern can be left to right, top to bottom or both.

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**EXAMPLE – DEGREE OF DIFFICULTY LOW**

**?**

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(A) (B) (C)

(D) (E) (F)

**Answer: B**

**Approach:** From left to right the dot goes from corner to corner anti-clockwise. From top to bottom the dot moves clockwise to the next corner of the square.

1.3.4 CONTINUING NUMERICAL SERIES

22 questions, 25 minutes test time

In these questions, a series of numbers is listed. There is a pattern behind these numbers which has to be determined, and then an additional number must be chosen which corresponds to this pattern.

**EXAMPLE – DEGREE OF DIFFICULTY MEDIUM**

4 20 16 32 28 44 40 ?

**Answer:** 56

**Approach:** Rule: +16, - 4, +16, - 4, etc.

Note: When marking an answer on the answer sheet, please note:

To indicate the correct number you must mark each digit separately. When, for example, the answer "17" should be marked, then 1 and 7 must be ticked off. If the

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solution is "71", then the answer must also be marked as 1 and 7. Both answers will look the same on the answer sheet.

**01**

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If the number is a negative one, then the minus sign "-" at the far left must be marked.

1.4 IN WHICH LANGUAGE SHOULD I TAKE THE EXAM?

We recommend you take the test in the language in which you can confidently read and interpret complex texts. (Exception: In the case of applications to medicine, it is possible that some universities, such as the RWTH Aachen, explicitly ask for the TestAS in the German language.)

TestAS evaluates cognitive abilities, and to be successful at the test, proficiency in the test language is required. Therefore, we recommend taking the test in the language you feel most confident in, regardless of the language in which you will pursue your studies in Germany.

According to the creators of the TestAS, a language level of B1 is necessary. In cases where there are only a few subtests, such as completing patterns in the core test and visualizing solids in the engineering module, a B1 level may be sufficient.

However, most other sections have lengthy questions that students must read quickly to identify the important parts. Test takers also need to watch out for tricky formulations and nuances in the meaning of a question. Consequently, your language skills will have a very strong and direct impact on your grade.

1.5 WHICH SUBJECT-SPECIFIC MODULE SHOULD I CHOOSE?

For the subject-specific modules, you may **choose one of the following four** modules:

a) Humanities, Cultural Studies and Social Sciences

b) Engineering

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c) Mathematics, Computer Science and Natural Sciences

d) Economics

The universities are free to determine which subject-specific module is required for which major. In the following overview, you can see which module you may choose for your chosen area of study (status June 2015). For the most current version, please visit the official website of the TestAS at www.testas.de.

Humanities, Cultural Studies and Social Sciences

Engineering Mathematics,

Computer Science and Natural Sciences

Economics

Economics

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German language and literature

Automotive engineering

Chemistry Business economics

Chemistry Business economics

Historical science Chemical

engineering

Computer science Business

management

Law Civil engineering Mathematics Education

management

Linguistics Electrical

engineering

Medicine Energy and water

management

Philosophy Environmental

engineering

Pharmacology Management

Politics Mechanical engineering

Physics Political economics

Sociology Mechatronics Psychology

Quelle: TestAS sample questions download, http://testas.de/en/download\_en.htm, 03.09.2015

If you are unsure of the applicable subject-specific module, please consult directly the university to which you are applying to. Universities normally give bonus points to TestAS only if the requested subject module is taken. For example, the curriculum of Industrial Engineering consists of both business administration and engineering. This does not mean that the university will award points to either the Engineering or Economics subject modules. The university will have a clear preference (in this case, probably engineering).

We would like to share with you one example to emphasise how important the correct choice of the subject module is. One of our students applied to the psychology department for the winter semester for 2015/2016 at Universität zu Köln where TestAS is required. She chose the subject-specific module Mathematics, Computer Science and Natural Sciences. uni-

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assist e.V. declined the application because Universität zu Köln apparently would have liked to have seen Humanities for the psychology application. The student objected to uni-assist, referencing the table on the TestAS website. Her application was eventually accepted for further evaluation by Universität zu Köln. This example shows that the universities are free to choose which subject test they want to see for which major.

If you are unsure which subject-specific module to take, consult the university directly.

1.6 HOW IS THE EXAM GRADED?

The makers of TestAS only disclose the scores on a normalized scale, comparing you to the reference group (i.e. students who took the same or a similar test). Therefore, we are not able to give you precise conversion tables between the number of correct questions and the final grade.

What we know regarding scoring:

- Each correct question increases your overall score.

- Wrong and omitted answers do not impact your score. (So do not leave questions

unanswered even if you have to blindly guess.)

After the exam, each student receives a score based on how well she/he performed compared to the other students who took the exam. Beyond this, there is very little public information regarding how scores are actually determined. In our experience, answering half of the questions correctly in the overall exam should land you at around the average grade of 100.

Many universities have started giving a small number of bonus points for above-average TestAS scores, which is defined as being above 100. The closer you are to the maximum score of 130, the more bonus points you normally receive. Please note that only 2% of students achieve scores of 120 or more.

As with most tests, your goal is to answer as many questions correctly as possible. Wrong answers and blank answers are treated in the same way. If you struggle with a certain question for more than one minute, just make an intelligent guess by eliminating the obviously-wrong answers and go on to the remaining questions. You can always come back if time remains at the end.

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1.7 HOW DO I INTERPRET THE CERTIFICATE WITH MY FINAL GRADE?

The results of the TestAS can be viewed approximately 4 weeks after taking the test. Every participant can view their results at the TestAS website using their login information (username and password) and subsequently print out a certificate. A sample of the certificate resembles the following:

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**PERCENTILE RANKS AND STANDARD SCORES**

On the certificate, the results are presented in two different ways.

The **standard score** shows your total score, scaled between 70 and 130 points. Standard scores between 90 and 110 indicate an average performance. Many universities start giving bonus points for TestAS scores above 100. Specifically:

- 14% of test takers score between 70 and 89 points.

- 36% of test takers score between 90 and 100.

- Another 36% score between 100 and 110.

- 14% achieve a result between 111 and 130.

The **percentile rank** expresses how many students you surpassed with your result. Your percentile rank can be between 1 and 100. A percentile rank between 31 and 70 indicates an average performance.

Let’s assume that your percentile rank is 85. This means that 15% of your reference group scored higher than you and that you scored higher than 85% of the reference group. TestAS does not disclose how the reference group is formed. But it is fair to assume that the reference group is formed by students who have taken the same exam, or a similar exam, as you.

**HOW TO INTERPRET THE TEST RESULTS?**

Your test results are determined based on your performance compared to other participants. For example:

1) An easy question that you and all participants answered correctly will neither have a

positive nor a negative influence on your percentile ranking and hence your score.

2) An easy question that most participants answered correctly but you answered

incorrectly (or omitted) will have a negative impact on your rating.

3) A difficult question that most participants could not answer correctly but which you

answered correctly will have a positive impact on your rating.

The same principle also applies if most participants fail to answer an easy question correctly, while you answer it correctly. However this is not very likely to happen.

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**HOW DOES THIS KNOWLEDGE BENEFIT YOU?**

This explanation sounds self-explanatory, but knowing this is of big importance.

a) If you only have limited time to prepare for the exam and must choose focus areas, it is better to start learning the sections with which many students have problems with. A good example is the subtest "Completing Patterns".

Some students have reported that they thought they performed rather poorly in the subtest "Completing Patterns". Nevertheless, their results were good. The reason for this is that many participants have difficulties with this unique subtest. In case of such questions, by answering just a few more questions correctly than the average student, you will benefit from a big improvement in your grade. Such subtests are true point- bringers because students can achieve relatively much with limited preparation.

The contrary happens in the subtest "Solving Quantitative Problems" - many students find it easy to answer the questions in this section. In order to improve your grade in this subtest, you need to study many topics.

b) It pays off to stay focused during the entire subtest. For example, we were informed that students had become overly confident because they were making very good progress in "Solving Quantitative Problems". They started wasting valuable time on the easy questions, thinking that the entire test would run as smoothly as the beginning. This form of self-confidence can be deceiving. Many students can solve the first questions rapidly and correctly. You should strive to answer every question as quickly and as well as you possibly can.

The opposite situation also occurs, such as when students become discouraged if they’re able to answer only half of the questions in the "Completing Patterns" segment. However, this is not necessarily bad since many other students will do poorly in this subtest. Again, one must remain focused on solving the questions, e.g., using the elimination method.

As with most tests, you’re simply trying to do better than your fellow students (i.e., the students in your reference group). Since the simpler questions will be answered correctly by most participants, you can get a high score on the exam by getting the difficult questions right. The assumption, of course, is that you have also done well on the easy questions!

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CORE TEST

2 HOW DO I BEST PREPARE FOR THE TESTAS?

2.1 HOW DO I REGISTER FOR THE TESTAS?

In order to register for the TestAS, you will need to go to the website: https://www.testas.de.

During the online registration process, you will be asked to enter your personal information and provide payment for the exam. (Since 2015, the fee for taking the TestAS has been 80 Euro.)

Once you are registered, any important information regarding the exam will be sent to you by email. For further details about this process, please visit the TestAS website shown above.

2.2 WHEN AND WHERE CAN I TAKE THE TESTAS?

The TestAS is normally offered three times per year. The next dates are as follows:

22.04.2017 (Sat)

19.05.2017 (Fri) (only in Germany)

28.10.2017 (Sat).

The deadline for registration is often several weeks before the actual test date. It is crucial to register for the test in due time.

For information concerning possible additional dates or date changes, look up the page https://www.testas.de/de/pruefungstermine.htm.

The TestAS can be taken in several countries as well as throughout Germany. The complete list of test centres can be found at the following websites:

Worldwide: https://www.testas.de/de/zentren\_welt.php

Within Germany: https://www.testas.de/de/zentren\_de.php

Internationally, TestAS is offered in only a limited number of cities. If a nearby location is not available, you can try emailing the TestAS team. The administrators of the TestAS and TestDAF are closely linked. They may be able to find solutions with a TestDAF centre close to you.

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Please note that the number of participating test centres may increase, depending on demand, as the test registration period progresses. For instance, initially in Turkey there were no test centres available for the April 2015 test. But over time, one city was added. As a second example, at the beginning of May 2015, the TestAS team announced that a one-off TestAS would be offered on May 31st at the Universität zu Köln.

If you do not find a suitable date or location, please check the TestAS website and/or contact the TestAS team.

2.3 WHAT DO I NEED TO BRING ON THE DAY OF THE TEST?

○ A valid photo ID (This should be the same form of identification that was used to register online)

○ A copy of the registration email you received from the test centre

○ A few ball-point pens with blue or black ink

○ Registration information (username and password) from testas.de.

It is also highly recommended that you bring drinks and a snack. The test can last over 4 hours, so you will want to maintain your energy during the test.

The test centre will provide paper for taking notes.

Finally you may want to consider bringing a simple stopwatch to help you manage your time spent on the questions. (You will not be permitted to use your mobile phone for this.)

**IMPORTANT TIP! CONSIDER USING THE LAST 5 MINUTES OF EACH SUBTEST FOR INTELLIGENT GUESSING OF THE UNSOLVED QUESTIONS. A STOPWATCH CAN HELP YOU PAY ATTENTION TO THE LAST 5 MINUTES.-**

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2.4 HOW DOES THE TEST PROCEED?

In total the test lasts over 4 hours. The exact time varies by the test centre as the break durations can differ.

1. Core Test 110 minutes

Break of roughly 30-45 minutes

2. Subject-Specific Modules 145-150 minutes

The test begins with the **Core Test**. This portion of the test consists of four sections and is designed to measure your overall cognitive ability. For each section, students are given a specific number of minutes. The next group of questions can only be started after you are given the signal to proceed from the test leader.

You will have a break before you move on to the **selected subject-specific module**.

The Core Test and the specialised module test are both issued in the form of a small exercise book.

**SYMBOLS FOUND IN THE EXERCISE BOOK**

In the exercise book, at the end of some sections you will see the following symbols:

Please go on to the next page and continue to work immediately

Do not turn the page! Wait for the sign of the test conductor! **STOP**

If you see the stop sign, it means that you have reached the end of the test. You may go back to the prior pages, but you may not move ahead to the next section. Do not turn the page here. This would be grounds to disqualify you from the entire test.

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2.5 HOW SHOULD I FILL OUT THE ANSWER SHEET?

For the core test and the subject specific modules, you will be given a question booklet along with a separate one-page answer sheet. All answers need to be marked on the **separate answer sheet** using a ball-point pen. Answers that are filled out incorrectly may not be counted toward your score. And the answers in the exercise book will not be evaluated.

Use a blue or black pen to fill in the answers. Please do not use a pencil. Your answer choice must be marked with an X. In the example below, B is marked.

**A B C D**

Should you need to change an answer that you have already marked, fill out the entire wrong circle and put an X in your new answer choice. In the example below, D is marked.

**A B C D**

In the unlikely event that you would like to make a further change, please fill out the wrong circles and cross the correct answer. In the example below, C is marked.

**A B C D**

If you change your mind again and you would like to re-enter an answer which you have already crossed out, you need to fill out the wrong circles and manually write the correct letter (A, B, C, D) at the end of the answer row. In the example below, B is marked.

**A B C D**

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But given a computer does the grading, we urge you not to make too many corrections on the answer sheet.

Please make sure that all of your answers are in the answer sheet before the time is up.

2.6 CAN I USE ANY AIDS DURING THE TEST?

All aids, such as calculators and dictionaries, are prohibited. The test centre will provide an answer sheet and paper for taking notes. Students are to bring their own ball-point pen to the test.

You are allowed to take notes and make your calculations on the question booklet as well as on the empty sheets of paper provided by the test administrator. However, only the answers crossed in the answer sheet will be graded.

You are free to bring a simple stop watch with you if you would like. There is however normally a clearly visible watch in the room where the test takes place. You are not allowed to use your mobile phone even in offline state.

2.7 WHAT CAN I MEMORISE IN PREPARATION FOR THE EXAM?

According to the test makers, the TestAS is not designed to test knowledge. Rather it measures cognitive abilities. Cognitive abilities are the different brain-based skills, such as problem solving, decision making, and visual and spatial processing. Many of these skills can be specifically trained.

Certain sections such as *Completing Patterns* are indeed like an IQ test rather than a standard high school test which tests a given knowledge. While you cannot memorise solutions in advance, you can create your own framework for solving the questions in a more structured and controlled way. In this book, we give you a sample framework to approach each question type. By practicing with many questions, you will acquaint your brain with the question format and the approach. This should enable you to answer more questions in less time and result in higher grades for you.

With some question types, especially in the subject-specific modules, prior knowledge can be very helpful. Taking the Natural Science test as an example, it is true that some of the questions can be answered without prior knowledge. For others you need to have understood the main concepts of the different Natural Sciences, such as astronomy,

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geography, and biology. Students who have already studied these subjects during high school report being able to go through the questions with greater confidence and speed because they are familiar with the content. Many questions may be theoretically solvable without prior knowledge, but given the time pressure, it helps to know the general concepts in advance.

For this reason we list in our books the breadth of different question types that are asked in the TestAS. Solve our questions, identify where you have gaps (e.g., simple probability/combination questions in the Solving Quantitative Problems) and study these before the exam.

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2.8 SUGGESTIONS FOR THE DAY OF THE TEST

Please consider the following suggestions while preparing for the test.

1.

• **Acquaint yourself with the different question types and how to fill out the answer sheet.** Some question types, such as Completing Patterns and Identifying Relationships, are quite unique, but they can be learned. Because the answers are marked with a pen (as opposed to pencil), the corrections are quite different from most common exams. It is worth reading our instructions in advance.

2.

• **Answer all questions, if needed by taking an educated guess.** The average student has time to solve only half of the questions. If you are stuck on a question, determine which answers are definitely wrong and use the process of elimination to guess the correct answer. Do not leave any answers blank.

3.

• **Answer the first questions quickly and without hesitation.** Each subtest starts with easier questions and increases in difficulty as the test progresses. Some students are surprised by how easy the first questions are and start double-checking every result. The first questions are very easy. Quickly move on so that you will have sufficient time for the more challenging questions.

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4.

• **Solve our questions without a calculator** in order to practise quick and error-free calculating. Two parts of the Core Test and half of the Economics exam require lots of calculations.

5.

• **Try to retain your concentration until the end.** The test is long and many students have difficulty concentrating in the subject modules. Your grade will be calculated compared to the performance of other students. By performing well when other students are beginning to lose focus, you can positively impact your grade.

6.

• **Bring drinks and a snack to keep up your enery.** The test can last over 4 hours. In most cases you are not allowed to leave the exam area.

7.

• **Try to get sufficient sleep the night before.** This might seem obvious, but is of great importance because you will need to be able to concentrate for over 4 hours.

8.

• Last but most importantly - **strengthen your language skills as much as possible.** Having strong language skills, especially a well-developed vocabulary, is in our view a prerequisite for above-average results. No matter what you read, whether it is fiction, newspapers of school books, you should read a lot in the language you will be taking the test in. The questions in the exam can be wordy and complex, and you will need to be understand them well enough to decide what is relevant to the questions.

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CORE TEST

3 SOLVING QUANTITATIVE PROBLEMS

3.1 THE QUESTIONS MAY BE EASY TO SOLVE, BUT THE GRADING IS TOUGH

The first subtest "Solving Quantitative Problems" measures the ability to solve basic mathematical problems. In this section, various disciplines found in mathematics are incorporated from algebra to geometry and on to probability and preliminary interest calculation.

You have 45 minutes to solve the 22 questions. Many students find the time to be adequate to go through all the questions.

Overall the difficulty level is rather low compared to other international university entrance exams. Many international students report being comfortable with most of the questions due to their high school studies. The questions are rather wordy to test your ability to recognize what is important in the long text.

In our sample questions, we included questions reflecting the breadth of the question topics. While solving the questions, please make a list of the question types where you tend to make mistakes. And then focus on solving many questions in this type so you can learn how to solve them.

Remember that the TestAS grading is done according to a bell curve, as explained in the grading section above. If an average student solves 18 of the 22 questions correctly, you would need to solve at least 19 questions to achieve an above-average score. The fact that you solved nearly all of the questions (18 of 22) does not benefit your score. What matters is whether you did better than the other students.

Consequently, don’t be misled by the overall easiness of these arithmetic questions. It just means that you need to be extra careful not to make mistakes unintentionally. In sections like this where the overall rate of correct answers is high, each missed answer can have a major impact on your score.

3.2 LIST OF QUESTION TYPES

Below we listed for you the main question types. All of these question types can be asked in this section of the Core test. If you have an area of weakness, focus on these. You will be sufficiently prepared to pass the exam if you can solve the questions in these categories that

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are at a medium level of difficulty. However, what is most important is that you understand the overall approach to solve each question type.

Algebra – Simplifying expressions

– Solving linear equations

– Venn diagrams

Arithmetic – Fractions

– Percentages

– Ratios and proportions

– Elementary combinatorics

– Probabilities

– Statistics

– Decimals

– Elementary powers and roots of numbers

Geometry – Triangles (Perimeter / Area / Angle)

– Pythagorean theorem

– Rectangles (Perimeter / Area)

– Circles (Perimeter / Area)

– Volumes

– Coordinate geometries

Word problems – Rate problems

– Mixture problems

– Elementary interest rate and profit problems

– Interpretation of graphs and tables

– Discounts.

3.3 PRACTICE EXAMS

You have 45 minutes to solve each test with the 22 questions

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3.3.1 EXAM 1

**1.1.**

**Joe is planning a party and expecting 300 guests. He would like to serve mini quiches as hors d’oeuvres. He is planning for each guest to have 2 quiches each. The quiches are sold in boxes of 25. How many boxes will Joe need to order to be sure each guest gets 2 mini quiches?**

(A) 16

(B) 24

(C) 30

(D) 36

**1.2.**

**In a call centre, 60% of the men and 72% of the women manage to make sales on their calls. How high is this percentage of men who make sales in the entire company when the team consists of 60% the company’s men?**

(A) 60

(B) 36

(C) 30

(D) 28

**1.3.**

**The owners of the Royal Mills complex need to replace the kitchen floors in 2 of their buildings. Each building at Royal Mills consists of 8 identical apartments. Each apartment has 90 m2 of total flooring. The kitchen makes up 1/10th of the flooring in each apartment. What is the total kitchen flooring in the 2 buildings that needs to be replaced?**

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(A) 144

(B) 100

(C) 72

(D) 9

**1.4.**

**One of the students taking this exam found** 1144 **of the problems to be easy, but** 25 **were in her opinion hard. What percentage of the problems were for her neither hard nor easy?**

(A) 20%

(B) 25%

(C) 35%

(D) 55%

**1.5.**

**A rectangular pipe has a length of 50 cm, a width of 3 cm and a height of 20 cm. If the pipe is to be filled with water at a rate of 4 cm3 per second, how many minutes does it take until the pipe is full?**

(A) 12.5

(B) 75

(C) 750

(D) 1,000

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**1.6.**

**The cinema is open 8 hours every day. It sells 30 tickets every hour Monday through Friday, and 20% of those sales are student tickets. It sells 100 tickets every hour on the weekends, and 30% of those sales are student tickets. If the regular charge for a ticket is 12 Euros Monday through Friday and 15 Euros on the weekends, and student tickets are 10 Euros every day, how many Euros does the cinema make every week?**

(A) 13,920

(B) 23,200

(C) 25,200

(D) 35,520

**1.7.**

**Dan is writing a short story for his English class. He writes 30 sentences in the morning before work and 50 sentences every night before bed. He knows he only needs to write 300 more sentences to complete his assignment. If he begins writing Friday morning and writes every day, morning and night, when will he complete his assignment?**

(A) Sunday night

(B) Saturday morning

(C) Monday morning

(D) Monday night

**1.8.**

**Maria lives in the U.S. and travels to Germany with 12,100 US dollars (USD) to finance her trip. She spends 50% of her money for her hotel, and her airline tickets cost 30%**

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**of the remaining amount. She spends 900€ on food during her trip. She had no other expenses. On the last day of her trip, she decides to buy souvenirs for her family that cost 500€ each. If during her trip 1€ is equal to 1.10 USD, how many souvenirs can Maria buy for her family?**

(A) 6

(B) 5

(C) 7

(D) 4

**1.9.**

**The urban beautification committee of the city wants to plant trees along the edges of the city’s main park (marked blue in the image below) and the edges of the playground inside (marked grey). If the ratio of the width to length of the park is the same as the ratio of the width to length of the playground. What is the total distance in meters that the beautification committee will plant with trees?**

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**28 m**

**8 m**

**16 m**

(A) 44

(B) 88

(C) 132

(D) 142

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**1.10.**

**Mr. Lothrup created a map of Turkey for his history class but discovered it was too small for his students to read. He enlarged the first map to create a second identical version with the same ratios. Given the measurements of the two maps, how big is x?**

(A) 10

(B) 504

(C) 15

(D) 20

**1.11.**

**Lisa, who is 160 cm tall, is standing 170 cm from her brother Eric, who is 180 cm tall. They begin to walk toward each other. If one step equals 1/10 of their respective heights, after how many steps will they come face to face?**

(A) 2

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12 cm

30 cm

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(B) 3

(C) 4

(D) 5

**1.12.**

X Y

2 5

4 10

5 A

6 15

10 25

The table shows the relationship between X and Y. What is the equation between X and Y, and what is A?

(A) 2X = 5Y, A = 6

(B) 2X = 5Y, A = 12.5

(C) 5X = 2Y, A = 12.5

(D) 5X = 2Y, A = 14

**1.13.**

**Petra needs to sell her car. She knows if she sells it for 18,000 Euros, she will lose 20% of her original buying price. If Petra wants to make a 15% profit over her original buying price, how much should she sell her car for?**

(A) 25,875

(B) 25,750

(C) 25,300

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(D) 25,280

**1.14.**

**There are 6 keys and only 1 of them unlocks the door. What is the probability of unlocking the door on the first try?**

(A) 112

(B) 13

(C) 130

(D) 16

**1.15.**

**Let P be the point (0,-1) and Q be the point (3,2). In this Cartesian coordinate system, find the point on the line segment PQ that is twice as far from P as from Q.**

(A) (3,1)

(B) (2,1)

(C) (2,-1)

(D) (1.5,0.5)

**1.16.**

**Lisa has saved 50 video games, 500 pictures, and 100 songs on her memory stick. She is unable to load more documents on the memory stick because there is no space left. If all the video games are deleted, half of the storage space becomes available. One picture is 5MB (MB= megabytes) and 20 pictures take as much space**

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**as a song. How many pictures can Lisa save on the memory stick if the memory stick is free?**

(A) 2,500

(B) 1,000

(C) 5,000

(D) 2,200

**1.17.**

**If Simon gives 2 Euros to Peter, they will have an equal amount of money. If Peter gives 2 Euros to Simon, Simon’s money will be five times Peter’s money. How many Euros does Peter have?**

(A) 4

(B) 6

(C) 8

(D) 10

**1.18.**

**Given that (3a + b) × (b - 1) = 17, what is a × b (a and b are positive integers)?**

(A) 5

(B) 6

(C) 8

(D) 10

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CORE TEST

**1.19.**

**Bethany owns 3 parrots. Together they weigh 10 kg. The second bird is three times as heavy as the first one, and the third is** 1199**th lighter than the second one. What do the 3 parrots weigh?**

(A) 1.4kg; 4.2kg; 4.4kg

(B) 1.5kg; 4.5kg; 4kg

(C) 1.6kg; 4.8kg; 3.6kg

(D) 1.7kg; 6.1kg; 2.2kg

**1.20.**

**If** qqyy **=** 2255 **, calculate the equation** 22yy−qq 22qq **.**

(A) 0.5

(B) 1

(C) 2

(D) 2.5

**1.21.**

**Mary is planning to make a fruit shake. She has watermelon, apple, orange, banana, mango, pineapple, and guava. In how many ways can she mix exactly three fruits for the fruit shake?**

(A) 7

(B) 21

(C) 35

(D) 62

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CORE TEST

**1.22.**

**The Mueller family wants to design a pool that holds 798 cubic meters of water. They have a space 19 meters long and 12 meters wide. How tall do they have to build the pool walls so it holds 798 m3 of water?**

(A) 2

(B) 2.5

(C) 3

(D) 3.5

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CORE TEST

3.3.2 EXAM 2

**2.1.**

**Tammy bought a new camera for her month long holiday in Italy. The camera comes standard with a 16 GB memory card, which can store 10,000 photos. But she doesn’t think that will be enough for her whole trip. If she buys a 50 GB memory card instead, how many photos will Tammy be able to store during her vacation?**

(A) 25,000

(B) 30,000

(C) 31,250

(D) 35,000

**2.2.**

**Carla is across from Lara and is 3km away. Felix is 4 km to Lara‘s right. What is the distance between Carla and Felix?**

**Lara**

**4 km**

**3 km**

**Carla**

(A) 4√2

(B) 5√2

(C) 5

(D) 7

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**Felix**

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CORE TEST

**2.3.**

**Margarite wants to call a friend in the United States. She knows it costs 8 cents for every 15 seconds of airtime. How many Euros will a 20 minute conversation with her friend cost?**

(A) 32

(B) 64

(C) 6.40

(D) 3.20

**2.4.**

**Brigit’s café is running a special on strudel and coffee. Coffee requires 0.1 litres of milk, and strudel requires 0.5 litres of milk. If Brigit has orders for 25 cups of coffee and 21 strudels, how many litres of milk will she need?**

(A) 11.5

(B) 13

(C) 14

(D) 15.5

**2.5.**

**Herbert wants to tell his friends on Twitter about a new video game he bought. He’s figured out that it will take 430 characters to share all the information. If each tweet is restricted to 140 characters, how many tweets will Herbert have to send in order to share his whole message?**

(A) 3

(B) 4

(C) 5

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CORE TEST

(D) 6

**2.6.**

**Ariana reads magazines on her smartphone. The font ratio is 5:2, height to width, respectively. If the height of each letter of the font Ariana has chosen is 15 mm-high, what is the width of the letter?**

(A) 3 mm

(B) 6 mm

(C) 15 mm

(D) 37.5 mm

**2.7.**

**Ben is putting new carpet in the office and showroom of his store. Both rooms are rectangular and cover the same area. The office is 12 metres by 30 metres. Ben knows the showroom is 18 metres wide. How long is the showroom?**

(A) 13

(B) 15

(C) 19

(D) 20

**2.8.**

**John is 2 meters tall and sees a building 20√3 m away and wants to determine the height of the building. He knows the angle of elevation between the top of the building and the top of his head is 30°, and with a 30-60-90 triangle, the ratio between**

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CORE TEST

**hypotenuse: adjacent side: opposite side = 2: √3: 1. What is the height of the building?**

(A) 20 m

(B) 22 m

(C) 24 m

(D) 26 m

**2.9.**

**What is the ratio of the area of a large circle to the area of a smaller circle, given that the radius of the larger circle is four times the radius of the smaller circle?**

(A) 2

(B) 4

(C) 8

(D) 16

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CORE TEST

**2.10.**

**The total ages of x children were t last year and will be u after 3 years. What is x in terms of t and u (their ages are greater than 1)?**

(A) t - 3u

(B) 3u - t

(C) u−t

4

(D) t−u4

**2.11.**

**The radius of circle A is r. The circle A is enlarged as A, B, C, D, and E. Ratios between radiuses:**

AABB **=** 1122 **,** BBCC **=** 4455 **,** DD CC**=** 5566 **, and** DDEE **=** 2233**.**

**If the line between the centres of A to E is 82 cm, what is r in cm?**

(A) 4

(B) 5

(C) 6

(D) 7

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CORE TEST

**2.12.**

**A rectangular box has a length of 20 cm, a width of 20 cm, and a height of 10 cm. What is the greatest possible distance between any two points on the box?**

(A) 20√2

(B) 20√3

(C) 30

(D) 40

**2.13.**

**In Mrs. Harrington’s history class, 80% of the students speak English and 60% speak German. There are 30 students who can speak only one language. What is the maximum number of students who may speak both English and German in her class?**

(A) 10

(B) 15

(C) 20

(D) 25

**2.14.**

**There are 20 horses on a farm. Ten of them are black, nine have short tails, and twelve have long hair. Only one horse is black and has a short tail and long hair. Three of the horses are black with short tails and short hair. Four of the horses have short tails and long hair but are not black. If all the horses on the farm have at least one of the 3 characteristics mentioned, how many horses are black with long hair but do not have short tails?**

(A) 2

(B) 3

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CORE TEST

(C) 4

(D) 5

**2.15.**

**Jon owns 14,250€ worth of stocks in a soda company. He needs to make some quick money and decides to sell the stocks and makes 75€ profit on each stock he sells. After selling all the soda stocks, he makes 18,600€. How many stocks did Jon originally own?**

(A) 55

(B) 56

(C) 57

(D) 58

**2.16.**

**Axel has a box of pens and pencils that he would like to package for the students at the primary school. He tries to bundle 2 pens and 3 pencils in packages but has 3 pencils left over. He tries a second time, bundling 4 pens and 7 pencils per package and now has 6 pens left. How many pencils are in Axel’s box?**

(A) 28

(B) 56

(C) 77

(D) 84

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CORE TEST

**2.17.**

**Thomas has a letter he wants to send to his girlfriend. The total perimeter of the blue stamp and envelope together is 50 cm. The ratio between them is 1:4. What is the perimeter of the stamp?**

(A) 5

(B) 10

(C) 15

(D) 20

**2.18.**

**There is a group of 4 people. If they regroup in groups of 2, 3 or 4, how many different groups can be formed?**

(A) 11

(B) 60

(C) 10

(D) 66

**2.19.**

**Gerda is training for a sports competition. One of her athletic exercises consists of rhythmical walking followed by a standing jump vertically upwards. The length of the**

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CORE TEST

**exercise stretch is 37 m. There are flagpoles at the start and end of the stretch. Gerda does the stretch with the following repetitive motion: 2 steps ahead, bounce vertically upwards, one step back, bounce vertically upwards. She repeats this sequence until she reaches the second flagpole at the end. How many steps does it take for Gerda if each step takes 3/4 meters?**

(A) 140

(B) 144

(C) 146

(D) 150

**2.20.**

**A swimming pool has a length of 10 m, a width of 8 m, and a height of 3 m. The pool is full with water and it is supposed to be emptied completely. It is drained with a speed of 3 cubic meters per minute. Because of a broken water pipe additional water is flowing at a speed of 270 cubic meters per hour for 30 minutes into the pool while emptying it. How many minutes does it take to empty the pool?**

(A) 110

(B) 125

(C) 130

(D) 135

**2.21.**

**Lenard is tossing two coins. Find the probability that he gets at least one head.**

(A) 0.25

(B) 0.5

(C) 23

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CORE TEST

(D) 0.75

**2.22.**

**A class is going to elect a President and a Vice-President of their Mathematics Society. If the class has 15 students, in how many ways can they elect these top 2 positions?**

(A) 225

(B) 29

(C) 58

(D) 210

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CORE TEST

3.3.3 EXAM 3

**3.1.**

**Farmer Jane just bought a ranch and now would like to stock it with animals. She knows it takes 200 hectares to raise 500 sheep, 200 cows, and 300 chickens. She has purchased 500 hectares. How many animals will Jane be able to raise?**

(A) 2,100

(B) 2,250

(C) 2,400

(D) 2,500

**3.2.**

**Karin has two friends who love to play chess and she’d like to make each of them a wooden chessboard for their birthday. Each square requires 10 cm2 of wood. If a chessboard has 64 squares, how many m2 of wood will Karin need to make 2 chessboards?**

(A) 0.064

(B) 6.4

(C) 0.128

(D) 1.28

**3.3.**

**Philip just won 240,000 Euros in the lottery. The bank pays a yearly interest rate of 10%. How much is Philip making in interest each quarter during the first year?**

(A) 2,000

(B) 6,000

(C) 8,000

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CORE TEST

(D) 12,000

**3.4.**

**Brigitte is replacing her kitchen floor. She is ordering rectangular tiles that are 12 cm by 25 cm. Her kitchen floor is 600 m2. How many tiles does Brigitte need to order to replace the whole floor?**

(A) 2

(B) 200

(C) 2,000

(D) 20,000

**3.5.**

**The price policy of a translation agency is given below:**

**Up to 1000 words €50**

**Each extra word €2**

**Analise and Ana have written their research papers in French but need to have them translated to German for their science professor. The papers have 1,011 and 550 words, respectively. What is the total price the two women will pay to the agency?**

(A) €112

(B) €122

(C) €100

(D) €132

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CORE TEST

**3.6.**

**Five friends own a piece of rectangular land which is 50 meters broad and 40 meters long. Petra’s land is 300 m2, Marko’s 580 m2, Carla’s 150 m2 and Susi’s 500 m2. How big is Peter’s piece of land?**

(A) 630

(B) 580

(C) 470

(D) 450

**3.7.**

**Nora rides her horse, Oscar, 175 m, while Paula rides her horse, Query, 105 m in the same amount of time. If they continue to ride at the same speed, how many meters does Nora ride when Paula rides 126 m?**

(A) 210

(B) 232

(C) 246

(D) 258

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CORE TEST

**3.8.**

**For every 2.5 Euros that Lars has, Marina has 4.5 Euros. When added together, their total is 133 Euros. How many Euros does Marina have?**

(A) 85.5

(B) 81.5

(C) 79.5

(D) 87.5

**3.9.**

**Alice is a years old. What is the sum of her ages after b + a years and before b - a years (a<b)?**

(A) a + b

(B) 2a

(C) 4a

(D) 4b

**3.10.**

**Irmi is traveling on her motorbike from Heidelberg to Frankfurt to visit her brother at university. The trip takes a total of 4 hours and 45 minutes if she travels a constant speed of 84 km per hour. After 3 hours and 20 minutes, she stops at her favourite restaurant for some burgers and fries. How much farther does Irmi still have to travel to get to the University?**

(A) 113

(B) 119

(C) 121

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CORE TEST

(D) 128

**3.11.**

**Given P = 2L+2W, find the value of L.**

(A) 2 P− W

(B) P4W

(C) 2P − 4W

(D) P2W

**3.12.**

**Melanie works at the lawn mower plant. She can complete her first lawn mower in 30 minutes. As she tires, it takes her twice as long as the previous one to assemble a lawnmower. If she works an 8 hour shift each day, how many lawnmowers can she complete in one shift?**

(A) 2

(B) 3

(C) 4

(D) 5

**3.13.**

**A firm of consultants in the USA looks at the TV ratings for a particular channel. The prime time, from 20:00 to 23:00, brings the channel 100,000 dollars of advertising revenue per hour. During the rest of the day, the channel earns 50,000 dollars of**

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CORE TEST

**advertising revenue per hour. How many dollars of advertising revenue does the TV channel earn in a day?**

(A) 300,000

(B) 1,000,000

(C) 1,050,000

(D) 1,350,000

**3.14.**

**Lara has 4 notebooks: two of these have pages with gridlines; the other two are without gridlines. If she wants the first notebook to have a gridline, how many different combinations of notebook sequences could she have?**

(A) 6

(B) 12

(C) 16

(D) 24

**3.15.**

**The average of** 1122**,** 4433**,** 11 1166**, and A is** 5544**. Find A.**

(A) 56

(B) 95

(C) 2

(D) 73

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CORE TEST

**3.16.**

**A small foundation gives a total of 960 Euros per month in scholarships to students, distributed equally among the recipients. Four students lose their qualification for the scholarship and will not receive a scholarship starting this month. The amount of money available as a result will be shared among the other students equally. In this way, the other students will get 40 Euros more per month. How many students were originally given scholarships?**

(A) 12

(B) 8

(C) 10

(D) 14

**3.17.**

**We are given an equation B =** 2222+33

ff

**Which of the following correctly reflects the value of e?**

(A) (2ffBB − 1.5)

(B) ff−3BB

2BB

(C) BB ff-1.5

(D) (ff − 3BB) × 0.5

**3.18.**

**A tennis ball is thrown from a 2m-high wall vertically down and strikes the ground at point A. After that, the ball repeatedly bounces off the ground. After each impact, the ball bounces exactly 2 cm to the left and 10 cm forward towards another wall. What will be the distance from Point B when the ball hits the 1 m distant, opposite wall? (We assume that there is no friction and that each time the ball bounces the same distance.)**

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CORE TEST

(A) 20 cm

(B) 100 cm

(C) 200 cm

(D) 280 cm

**3.19.**

**Maria has a small business. She is** 5522 **times as old as the youngest apprentice, Ida. Maria is** 115588 **as old as her colleague, Gene. If you add Maria, Ida, and Gene’s ages they equal 87 years. How old is Ida?**

(A) 17

(B) 18

(C) 21

(D) 22

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CORE TEST

**3.20.**

**If Zelda bikes m metres in s seconds, how many metres does she bike in Y minutes?**

(A) mmmmss

(B) 60mm

ssmm

(C) 60mmss

mm

(D) 60mmmm

ss

**3.21.**

**Michael and Jackson are playing dice. Michael is to throw the dice after Jackson throws it. Jackson wins if the sum of the first and the second throws of the dice is 4. Find the probability that Jackson wins.**

(A) 14

(B) 18

(C) 112

(D) 116

**3.22.**

**A vocal coach must choose three amateurs from 8 singers. How many different ways can he choose the amateurs?**

(A) 336

(B) 112

(C) 64

(D) 56

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CORE TEST

3.4 ANSWER KEY

**Exam 1 Exam 2 Exam 3**

**Question Answer Question Answer Question Answer**

1.1. B 2.1. C 3.1. D

1.2. B 2.2. C 3.2. C

1.3. A 2.3. C 3.3. B

1.4. C 2.4. B 3.4. D

1.5. A 2.5. B 3.5. B

1.6. D 2.6. B 3.6. C

1.7. D 2.7. D 3.7. A

1.8. B 2.8. B 3.8. A

1.9. C 2.9. D 3.9. C

1.10. B 2.10. C 3.10. B

1.11. D 2.11. A 3.11. A

1.12. C 2.12. C 3.12. C

1.13. A 2.13. C 3.13. D

1.14. D 2.14. A 3.14. B

1.15. B 2.15. D 3.15. C

1.16. C 2.16. D 3.16. A

1.17. A 2.17. B 3.17. B

1.18. D 2.18. A 3.18. D

1.19. B 2.19. C 3.19. B

1.20. C 2.20. B 3.20. D

1.21. C 2.21. D 3.21. C

1.22. D 2.22. D 3.22. D

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CORE TEST

3.5 DETAILED ANSWERS

3.5.1 EXAM 1

**1.1.**

**Joe is planning a party and expecting 300 guests. He would like to serve mini quiches as hors d’oeuvres. He is planning for each guest to have 2 quiches each. The quiches are sold in boxes of 25. How many boxes will Joe need to order to be sure each guest gets 2 mini quiches?**

(A) 16

(B) 24

(C) 30

(D) 36

**Answer: B**

Multiply the total number of guests coming by 2 to determine the total number of mini quiches Joe must order. 300 × 2 = 600 total quiches needed. Divide the total number of quiches by the number in each box to determine the number of boxes Joe must order 600

25 = 24 boxes.

**1.2.**

**In a call centre, 60% of the men and 72% of the women manage to make sales on their calls. How high is this percentage of men who make sales in the entire company when the team consists of 60% the company’s men?**

(A) 60

(B) 36

(C) 30

(D) 28

**Answer: B**

Determine how many men make sales.

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CORE TEST

Assuming the company has 100 employees, 60 would be men.

Of those 60 men, 60% make sales.

This means 100 60

× 60 = 36 men of the 100 employees make sales.

This equals 36%.

**1.3.**

**The owners of the Royal Mills complex need to replace the kitchen floors in 2 of their buildings. Each building at Royal Mills consists of 8 identical apartments. Each apartment has 90 m2 of total flooring. The kitchen makes up 1/10th of the flooring in each apartment. What is the total kitchen flooring in the 2 buildings that needs to be replaced?**

(A) 144

(B) 100

(C) 72

(D) 9

**Answer: A**

Determine the number of m2 of flooring in each building: 90m2 × 8 = 720 m2 total in each building.

If 101th of that is kitchen floor, then 720 × 110 = 72 m2 is kitchen flooring in each building.

Multiple total kitchen flooring by 2 to get total m2 in 2 buildings: 72 m2 × 2 = 144 m2.

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CORE TEST

**1.4.**

**One of the students taking this exam found** 1144 **of the problems to be easy, but** 25 **were in her opinion hard. What percentage of the problems were for her neither hard nor easy?**

(A) 20%

(B) 25%

(C) 35%

(D) 55%

**Answer: C**

Determine how many problems were both hard and easy: 1144 + 2255 = 11332222.

Determine how many exercises were neither hard nor easy: 1 – 11332222 = 22222222 – 11332222 = 222277.

720 = 35% of the problems were neither hard nor easy.

**1.5.**

**A rectangular pipe has a length of 50 cm, a width of 3 cm and a height of 20 cm. If the pipe is to be filled with water at a rate of 4 cm3 per second, how many minutes does it take until the pipe is full?**

(A) 12.5

(B) 75

(C) 750

(D) 1,000

**Answer: A**

The volume of the rectangular pipe is given by 50 × 3 × 20 = 3,000 cm3.

Thus, the pipe will be filled with water in 3000

4 = 750 seconds.

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CORE TEST

In minutes: 750

60 = 12.5 minutes.

**1.6.**

**The cinema is open 8 hours every day. It sells 30 tickets every hour Monday through Friday, and 20% of those sales are student tickets. It sells 100 tickets every hour on the weekends, and 30% of those sales are student tickets. If the regular charge for a ticket is 12 Euros Monday through Friday and 15 Euros on the weekends, and student tickets are 10 Euros every day, how many Euros does the cinema make every week?**

(A) 13,920

(B) 23,200

(C) 25,200

(D) 35,520

**Answer: D**

Determine how many total tickets are sold each day Monday – Friday:

30 × (20 ÷ 100) = 6 student tickets and 24 normal tickets will be sold in an hour.

(6 × 10) + (12 × 24) = 60 + 288 = 348 Euros per hour

348 × 8 × 5 = 13,920 Euros

Weekends:

100 × (30 ÷ 100) = 30 student tickets and 70 normal tickets will be sold in an hour.

(30 × 10) + (70 × 15) = 300 + 1050 = 1,350 Euros per hour

1,350 × 8 × 2 = 21,600 Euros

Total: 13,920 + 21,600 = 35,520 Euros

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CORE TEST

**1.7.**

**Dan is writing a short story for his English class. He writes 30 sentences in the morning before work and 50 sentences every night before bed. He knows he only needs to write 300 more sentences to complete his assignment. If he begins writing Friday morning and writes every day, morning and night, when will he complete his assignment?**

(A) Sunday night

(B) Saturday morning

(C) Monday morning

(D) Monday night

**Answer: D**

Determine the number of sentences Dan writes each day: 30 + 50 = 80 sentences in one day. Friday, Saturday, and Sunday he writes: 80 × 3 = 240 sentences.

By Monday morning he still has: 300 - 240 = 60 sentences left to write.

He will only write 30 in the morning and still have: 60 - 30 = 30 sentences left to write.

Monday night he can write 50 sentences before bed. He will finish Monday night.

**1.8.**

**Maria lives in the U.S. and travels to Germany with 12,100 US dollars (USD) to finance her trip. She spends 50% of her money for her hotel, and her airline tickets cost 30% of the remaining amount. She spends 900€ on food during her trip. She had no other expenses. On the last day of her trip, she decides to buy souvenirs for her family that cost 500€ each. If during her trip 1€ is equal to 1.10 USD, how many souvenirs can Maria buy for her family?**

(A) 6

(B) 5

(C) 7

(D) 4

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CORE TEST

**Answer: B**

Determine the total number of Euros Maria has:

1 Euro = 1.10 Dollars

1 ÷ 1.10 Euro = 1 USD

12,100 USD × (1 ÷ 1.10) = 11,000 Euros

50% goes to hotel: 11,000 × (50 ÷ 100) = 5,500 for hotel

30% of remaining goes to airline tickets: 5,500 × (30 ÷ 100) = 1,650 Euros for tickets

Determine how much Maria has left after her costs:

11,000 – (5,500 + 1,650 + 900) = 2,950 Euros left (after cost of hotel, tickets, food)

If each souvenir costs 500 Euros, then: 2,950 ÷ 500 = 5.9; so she can buy 5 souvenirs.

**1.9.**

**The urban beautification committee of the city wants to plant trees along the edges of the city’s main park (marked blue in the image below) and the edges of the playground inside (marked grey). If the ratio of the width to length of the park is the same as the ratio of the width to length of the playground. What is the total distance in meters that the beautification committee will plant with trees?**

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**28 m**

**8 m**

**16 m**

(A) 44

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CORE TEST

(B) 88

(C) 132

(D) 142

**Answer: C**

The ratios are: 2816 = 8 xCross multiply to solve for x: 16x = 28 × 8

x = 224 ÷ 16 x = 14m

Determine parameters of playground and grassy area:

(14 × 2) + (8 × 2) = 44 m for playground

(28 × 2) + (16 × 2) = 88 m for grassy area

Find total area to be planted:

44 + 88 = 132 m will be planted.

**1.10.**

**Mr. Lothrup created a map of Turkey for his history class but discovered it was too small for his students to read. He enlarged the first map to create a second identical version with the same ratios. Given the measurements of the two maps, how big is x?**

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12 cm