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Introduction

Welcome to the NTK SAT Reasoning Test (Math) book! This book is designed to give you the boost you need to confidently take the SAT Reasoning Test (Math). Our book offers you:

What You Need to Know

The essential math information you need to get a high score.

Examples

To highlight ideas and techniques and demonstrate how the concepts are applied to actual questions.

Practice Questions

To provide you good practice on what you have learnt in every single chapter.

Sample Tests

At the end of the day, it's about doing the math, right? We have 4 tests to let you practice your skills.

Answers and Solutions

Each question on our every test has a full explanation. More than that, we provide multiple solutions so you can see how to approach the same problems from different angles: using algebra, plugging-in or a graphing calculator.

Formula Sheets

To get a top score, you need to remember lots of formulas and techniques. We provide a set of formula sheets with the most important 80 mathematical concepts that enable you to brush up your knowledge anywhere, anytime.

The SAT Reasoning Test

What is it?

The SAT Reasoning Test (Math) test is produced by the College Board, a non-profit association of colleges in the US. The SAT consists of three parts: critical reading, mathematics and writing. Most US tertiary institutions accept SAT Reasoning Test (Math) scores and regard it as an important assessment of each individual applicant.

Do I have to use a calculator in the test?

Yes! Not every question requires one, and sometimes using a calculator is not the fastest way to go, but you definitely need one available to do many of the calculations quickly and handle things like square roots and decimals. Also, it's preferable to use a graphing calculator; this can REALLY speed you up.

What kind of calculator can I use?

What with the zillions of different models about nowadays we obviously can't give a complete list of which are acceptable or not. Generally though, if you have a scientific calculator or a graphing calculator you'll be okay. But be aware, certain general types of calculating devices are banned!

These are definitely not okay for the SAT Reasoning Test (Math):

Writing pads, pocket organizers, mobile phone calculator options, laptops, QWERTY keyboard calculators or stylus/pen input devices.

These are not allowed on the test, so if you were thinking of using one of these then don't! Get a scientific or graphing model.

What's the test format?

There are a total of eight sections on critical reading, mathematics and writing. In

mathematics, there are three sections (two 25-minute tests and one 20-minute test) with 44 multiple-choice questions and 10 student-produced response questions (grid-ins).

How's it scored?

Simple:

+1 for every correct answer to a multiple-choice question or student-produced response question

$-\frac{1}{4}$ for every wrong answer to a multiple-choice question

0 for every omitted question

The $-\frac{1}{4}$ is designed to remove the benefit of random guessing.

What's the grading?

This is a bit strange. The lowest score for each section is about 200 (it varies). To score a 200 you have to get nearly everything wrong. It's just about impossible to do this bad, even if you guess on everything! The highest score is **800**, but 800 is not necessarily 100%. You can still get 800 even if you get several questions wrong and omit a few. The actual number of questions right, wrong or omitted to get 800 varies slightly from test to test. The highest total possible SAT score is thus 2,400.

What's a good score?

A "good score" depends on what you want to achieve at college. If you want to go to MIT, Harvard or Princeton, then anything less than 2,200 is going to be considered weak. If you are applying to a good second-tier college, then 2,000 might be considered an excellent score.

When should I take it?

If you are following a US system, you should take it after you have completed (or nearly completed) an Advanced Algebra (Algebra II) honors course. If you are taking

classes in a British System or IB system, then take it toward the end or after your I/GCSE or IBMYP Year 11 course. Of course, you may be confident and good enough to take it earlier, but the average student is unlikely to have sufficient skills or knowledge to get a decent score.

Should I guess answers?

Even if you have no idea about the answer for a particular question, it's okay to guess; overall, you will not lose out. However, in many questions you may be able to eliminate one or more choices by using logical thinking and knowledge of the situation. In these cases it is definitely to your benefit to make an **educated** guess.

How to use this book?

Read through all of the chapters – even if you think of yourself as a math genius. If you are familiar with a particular topic, then go straight to the practice questions at the end of the chapter. On the other hand, if something is unfamiliar, then you need to read the materials thoroughly and go over the examples in detail. Make sure you understand each topic completely before moving on to the next one.

Have a pen and paper handy. If you have just read about a formula that is new to you, write it down a couple of times. Write it down with different variables. DO something; don't just read. When you come to an example question, cover up the answer first and think about how you would solve it. Even if you can't get the answer, it is important to set your mind thinking the right way. Reading a mathematics book is not the same as reading a novel or magazine – you have to think HARD!

Do the sample tests. After studying all the chapters, go on to the sample tests. There is advice on how to take them on pages 121 – 123.

Check the detailed solutions for both the questions you got wrong or omitted and even those you got correct but guessed. Follow the steps in the solutions and be sure

that you know exactly what is discussed. Go back to the corresponding chapter to review if you are still unsure about a concept or technique. For questions with multiple answer methods, choose the one you feel most comfortable with. There is no definite best method in mathematics. The “best” technique is the one that enables you to get the correct answer in the shortest time; nobody cares how you get it!

Keep a record of questions you get wrong. Are there any patterns? For example, do you keep getting function questions wrong or do you have problems remembering certain formulas? Find your particular weaknesses and revise those topics in which you often make mistakes.

Use the FORMULA SHEETS. At the back of the book are a set of formula sheets covering all the main concepts, formulas and techniques you need to succeed in the SAT Reasoning Test (Math). Read them whenever you have a spare moment: on the bus, during lunch or even between classes. Get into the habit of doing some everyday. This will help you memorize all stuff necessary.

Be consistent in your learning. It’s a lot better to spend just 20 minutes everyday reading the book, starting well before the actual test, rather than trying to cram everything into your head the night before. Pace your learning and draw up a review plan. In this way, you’ll be confident of success.

What can do I do for extra help?

Although some people find that they can work things out on their own, many students want a little extra help to achieve their potential. At **NTK Learning Center Ltd.**, we have years of experience helping students with the SAT Reasoning Test (Math) and other tests. We offer **intensive review courses** covering all the materials for the SAT Reasoning Test (Math) in both small classes (maximum of 6 students) and individual lessons. NTK’s experienced, full-time instructors have the expertise and resources to help you reach your goals in math, sciences and humanities. Visit www.ntk.edu.hk us for further information on how we at NTK can help you.