Lesson 1—SAT Overview

What is the SAT?
(from sat.collegeboard.org) *The SAT is a globally recognized college admission test that lets you show colleges what you know and how well you can apply that knowledge. It tests your knowledge of reading, writing and math — subjects that are taught every day in high school classrooms. Most students take the SAT during their junior or senior year of high school, and almost all colleges and universities use the SAT to make admission decisions.*
Taking the SAT is the first step in finding the right college for you — the place where you can further develop your skills and pursue your passions. But SAT scores are just one of many factors that colleges consider when making their admission decisions. High school grades are also very important. In fact, the combination of high school grades and SAT scores is the best predictor of your academic success in college.

The SAT Reasoning Test is a long examination (three hours and forty-five minutes) and has three main divisions: Math, Reading, and Writing
There are 10 sections in all – three for each division, and one 'equating' section. The equating section is used to assess questions for use in future tests. It can be in any of the three areas and does not count toward the score.

Apart from a short essay and 10 out of the 54 math questions (these 10 are grid-in questions), the questions are all five-answer multiple-choice. Each of the divisions has a maximum score of 800, giving a maximum overall score of 2400.

You earn points on the exam. Correct multiple choice answers receive 1 point. Incorrect multiple choice answers lose 1/4 of a point. Blank multiple choice answers do not earn or lose any points. There is not deduction for incorrect grid-in answers.

Your total SAT composite score is a number from a lowest possible score of 600 to a highest possible score of 2400. Out of that, your math score ranges from 200 to 800, based on your performance on the three mathematics sections of the test.

- A 25-minute section containing 20 multiple-choice questions which require you to choose the correct answer among 5 choices (A) through (E).
- A 25-minute section containing 18 questions: 8 multiple-choice questions and 10 grid-in questions (also called student-produced response questions), which require you to record the right answer into a special grid.
- A 20-minute section containing 16 multiple-choice questions.

On each of these three sections, calculators are allowed, but all questions are designed to be done without a calculator. You will see questions covering typical high school math subjects such as arithmetic operations, algebra, geometry, statistics, trigonometry and probability.

Here's an important fact about the structure of the SAT: **questions within a given section get progressively more difficult**. In other words, the questions will get harder as you go along. This aspect of

the test's structure should figure into your test-taking strategy. Remember that an easy question is worth the same amount of points as a harder one. So pick up those easy points as quickly as you can!

- **Easy** Questions (first third): the "obvious" answer is almost always correct. Tests you usually on a single basic skill.
- **Medium** Questions (middle third): the "obvious" answer is sometimes correct. A bit more complicated.
- **Difficult** Questions (last third): the "obvious" answer is almost never correct. Usually require several steps and a variety of skills.

What is the SAT *REALLY* testing?

Reasoning. Contrary to popular opinion, the SAT does not merely test how well you can take a test or write a formulaic essay. Also, it is not designed to predict your college grades. Neither is it a test of overall intelligence nor of the major subject material you've learned in high school. Instead, it is designed to do what your school grades rarely do directly—assess a very particular set of academic skills that are central to your success as a college student. These skills include thinking and reasoning under pressure, writing cogently and fluently, understanding complex prose, and tackling a wide range of quantitative problems.

Of course, there are many other skills that are important to college success, creativity, organization, time management, maturity, social intelligence, perseverance, etc., but those skills are almost impossible to assess with a multiple-choice test. So, college admissions officers look elsewhere in your application—your essays, your recommendations, your extracurricular activities, etc.—to evaluate those qualities. The SAT is not to be taken lightly or cynically; critical reading, writing, and mathematical skills are central to success in college and beyond . . .

What are the key reasoning skills I should hone for the test?

Students who ace the SAT are adept at 8 core reasoning skills: mapping problems, analyzing problems, finding patters, simplifying problems, connecting to knowledge, considering alternatives, thinking logically, and checking their work. If you practice tackling SAT problems with these skills in mind, you will find that you can break through even the toughest questions. Let's look at these skills a bit more closely.

Mapping Problems

Mapping a problem is the first step to solving it. It's a logistical skill: the planning, implementation, and coordination of the details in a problem. It means greeting and orienting yourself to the problem, then appropriately representing its information (either verbally, graphically, numerically, or by an equation). It's called mapping because it's like pulling out a map when planning a trip—the map doesn't tell you HOW to get to your destination, but it ORIENTS you to the problem by showing you where you are and where you need to end up and options for getting there.

If you have the wrong map at the start, you'll never solve the problem—on the SAT or anywhere else. Many students struggle on the SAT because they don't realize what a what it is really testing. They don't think or process. They don't PLAN the trip, they just start walking in any ol' direction. For instance, many students try to conquer the test with rote, cookie-cutter procedures or heavy, laborious calculations rather than looking for the elegant, simple solutions that emerge from seeking patterns and analyzing problems from different angles. They forget to read the math problems carefully, so they miss essential facts and restrictions that make the problems easier to solve.

Analyzing Problems

Once you understand the problem, you must look at its parts and think about how they fit together. What's relevant, what's irrelevant, etc. This is called analysis. To fix a clock, you have to analyze its parts and see how they work together. To solve a tough SAT problem, you have to analyze the parts of the question. Be sure to mark up your test booklet—draw on diagrams, underline the passages, cross out wrong answers, write out your equations, etc. You must understand how equations work, what unknowns represent, and how parts of geometric figures relate to one another.

Finding Patterns in the Problem
After analyzing the problem, look for patterns. For instance, if you're given a sequence like 3, 8, 13, 18, … you should recognize a simple pattern (add 5). This lets you keep track of terms without memorizing every single term. Similarly, formulas such as $\text{distance} = \text{rate} \times \text{time}$ show important relationships between the parts of a problem (direct and inverse proportionality)

Simplifying the Problem
Make molehills out of mountains, not the other way around. Often, problems on the SAT have simple and elegant solutions that can be found without arduous and laborious calculations (back-solving, plug-and-check, choice "C," etc.). Finding this route to the right answer not only increases your chance of getting the right answer by eliminating possibilities for careless mistakes, it gives you more time on other, more challenging questions. Having an excess of time goes a looong way in keeping your reptilian brain dormant while your cerebral cortex is working (you'll feel more confident and relaxed).

Connecting to Previous Knowledge
Even though the SAT mainly tests flexible reasoning skills, you still need to have plenty of memorized facts and procedures—vocabulary, symbols, operations, formulas, etc.—at the tip of your brain. Fear not! You don't need to memorize a ton of facts, in fact, the SAT gives you most of the common formulas you'll need. BUT . . .you do need to know that they exist, where to get them, and how to use them. You need to be able to immediately recognize something from your past, where to get what you need, then use it correctly.

Finding Alternatives
On SAT math problems, students often perform the first procedure that pops into their heads with the first numbers or symbols they come across i.e. distribuitn whenever they see parenthesis, solving equations whenever they see a variable, etc. HUGE mistake! Remember, the SAT isn't testing your memorization of rote skills as much as it is testing your mental **flexibility** and **emotional intelligence**! Every SAT question is unique, and many can be solved in several different ways. Good test-takers consider their alternatives before diving in.

Some SAT math problems that look like algebra problems can be solved more simply with numerical or geometric methods, and some that look like geometry problems can be solved more simply with algebraic or numerical methods. To find the simplest method, you have to consider your options. Don't assume your math teacher's or best friend's or random stranger's favorite method is always the best one for you in any particular instance.

Thinking Logically
Logic is one of the most powerful reasoning tools you can use on the SAT. SAT math questions will ask you to determine what *must* be true based on some given assumptions. For instance, if you're outside and it's raining, do you get wet? Not necessarily. What about this statement: "If I score a perfect score on my SAT, college will be a breeze for me." How about: "Nothing is better than eternal bliss. A ham sandwich is better than nothing. Ergo, a ham sandwhich is better than eternal bliss." Don't be a victim to faulty logic that results from hasty, reptilian-brain thinking or failing to consider

different avenues outside of "the box." You'll have to also determine the logical structure of sentences and make logical inferences and make logical assumptions from what's given.

Checking Your Work

Everyone makes careless mistakes, especially in high pressure, stressful, and/or timed environments. Good students, though, always check their work for errors. Don't wait until you're completely finished with a problem, and don't merely repeat the same steps to check your work (same road, same ruts). Instead, as you solve a problem, ask yourself, "Self, am I making progress here? Is there a more efficient route? Am I missing something?" After you've found an answer ask, "Self, does this answer make sense? Is it reasonable? Did I show my steps clearly? Do I get the correct answer when I plug it back in? Can I repeat this result with a different approach? Do I have enough time to be asking myself so many questions?"

On SAT math questions, estimate whenever you can to check you work. If you can make an easy estimatte of the answer, then you can **eliminate choices** that are waaaaaaay wrong.

What Terminology, Symbols, & Operations do I Need to Know?

Symbol References:	
=	is equal to
≠	is not equal to
>	is greater than
<	is less than
≥	is greater than or equal to
≤	is less than or equal to
∥	is parallel to
⊥	is perpendicular to
Terms:	
Natural numbers	The counting numbers: 1, 2, 3, . . .
Whole numbers	The counting numbers beginning with zero: 0, 1, 2, 3, . . .
Integers	Positive and negative whole numbers and zero: . . . –3, –2, –1, 0, 1, 2, . . .
Odd number	Number not divisible by 2: 1, 3, 5, 7, . . .
Even number	Number divisible by 2: 0, 2, 4, 6, . . .
Prime number	Number divisible by only 1 and itself: 2, 3, 5, 7, 11, 13, . . .
Composite number	Number divisible by more than just 1 and itself: 4, 6, 8, 9, 10, 12, 14, 15, . . . (0 and 1 are neither prime nor composite)
Square	The results when a number is multiplied by itself: $2 \times 2 = 4$; $3 \times 3 = 9$. Examples of squares are 1, 4, 9, 16, 25, 36, . . .
Cube	The results when a number is multiplied by itself twice: $2 \times 2 \times 2 = 8$; $3 \times 3 \times 3 = 27$. Examples of cubes are 1, 8, 27, 64 . . .

Math Formulas

Triangle	Perimeter = $s_1 + s_2 + s_3$
	Area = $\frac{1}{2}bh$
Square	Perimeter = $4s$
	Area = $s \cdot s$, or s^2
Rectangle	Perimeter = $2(b + h)$, or $2b + 2h$
	Area = bh, or lw
Parallelogram	Perimeter = $2(l + w)$, or $2l + 2w$
	Area = bh
Trapezoid	Perimeter = $b_1 + b_2 + s_1 + s_2$
	Area = $\frac{1}{2}h(b_1 + b_2)$, or $h\left(\frac{b_1 + b_2}{2}\right)$
Circle	Circumference = $2\pi r$, or πd
	Area = πr^2
Cube	Volume = $s \cdot s \cdot s = s^3$
	Surface area = $s \cdot s \cdot 6$
Rectangular Prism	Volume = $l \cdot w \cdot h$
	Surface area = $2(lw) + 2(lh) + 2(wh)$

Pythagorean theorem ($a^2 + b^2 = c^2$): The sum of the square of the legs of a right triangle equals the square of the hypotenuse.

FAQ's

- ***How much studying should I do for the SAT?***
  30 minutes four days a week minimum. More is better. It comes down to three simple things: practice, practice, practice. Devote a few Saturdays to a full-length 4-hour exam.
- ***What is "Score Choice" and how do I use it?***
  Colleges that accept the SAT Score Choice option allow you to submit certain SAT and SAT Subject Test scores while withholding others. This is designed to reduce your stress and improve your test-day experience. Not all colleges allow Score Choice, though. You can decide which SAT score you want to submit, but you still have to submit the entire test—you can't report, for example, a math score from one test with the essay score from a different test. In other words, if you "BOMB" and entire SAT test, no one will ever have to know. If you submit multiple tests to colleges, most of them will take the top scores from each section from multiple exams anyway (called "superscoring"). You should take the SAT test at least twice, beginning your junior year. Do NOT release your scores until you are happy with your overall score report.
- ***What do the colleges do with my scores anyway?***
  The scores reveal the caliber of student you are your level of college readiness. It's one of the main criteria they use in accepting or denying your admissions application (along with rank, GPA, recommendations, extracurricular activities, and leadership). SAT scores correlate strongly with post-college success. Students with high SAT scores are more likely to graduate from college and have successful careers afterwards. Accepting students with high SAT also makes the colleges look good themselves (this is why most "superscore").
- ***When should I take the SAT and what SAT subject tests should I take?***

You should take the SAT at least twice, the first time being at least by the Spring Semester of your Junior year. The second is recommended in the Fall Semester of your Senior year. Subject tests may be required by particular schools (check with schools), but are recommended in the Spring Semester of your Junior year, especially if your school grade is low in a particular subject. Taking the ACT by the end of your Junior year is a good insurance policy, too). This will allow you to have a complete testing profile by the end of your Junior year before you even start applying to colleges, allowing you plenty of opportunities to retest, if necessary. If your college does not require the SAT test, it is still recommended to take it: submit it if it is good, don't submit it if you're not happy with the result.

SAT Test Dates 2012-2013*

Test Dates	Test	Test Dates	Test
October 6, 2012	SAT & Subject Tests	March 9, 2013	SAT only
November 3, 2012	SAT & Subject Tests	May 4, 2013	SAT & Subject Tests
December 1, 2012	SAT & Subject Tests	June 1, 2013	SAT & Subject Tests
January 26, 2013	SAT & Subject Tests		

*These test dates are subject to change. For the latest updates on the test dates and registration deadlines, go the College Board website. www.sat.collegeboard.org

- ***How do I register for the SAT?***
  Check www.sat.collegeboard.org for latest information about registration, test sites, deadlines, fees, and procedures. You can also pick up a Registration Bulletin in the career center or from your counselor. The test currently costs $50.
- ***What's a good SAT score?***
  It depends where you plan on going. 2400 is perfect. 600 is the lowest. The median (50th percentile) score for EACH section is usually between 490 and 530. At the most competitive colleges, the average SAT score is above 700 on each section, which is about 5% of students taking the exam. Go to colleges you're interested in and check their quartile SAT scores for incoming freshman. This will give you a good idea of how your scores compare with those of other students who have been admitted.
- ***When will I get my scores?***
  You can get your SAT scores by phone or on the Web between 2 and 3 weeks after you take the test. About 10 days after your scores are available online, a written report will be mailed to you free of charge. Any schools you send your scores to will receive them by mail about the same time you do. You can "rush" results to a college for a handsome fee.
- ***Do I get my test back with my scores?***
  No, but if you take the test in October, January, or May, you can request the Question and Answer Service (QAS) for a fee. You will then be provided with a copy of the test booklet, a record of your answers, the answer key, scoring instructions, and information about the type and difficulty of each question. You can order the QAS when you register for the test or up to 5 months after the test date.
- ***Are some SAT's Easier than others?***
  No. They are all similar in difficulty. Also, the SAT curve is determined ahead of time, based on the "equating" or experimental sections from previous exams. This helps ensure the SAT is as "difficult" as every other recent SAT. Tests ARE easier, however, when YOU are more prepared!
- ***Should I guess if I don't know the answers?***
  Maybe. Remember that if you don't know the answer, a blank **multiple-choice answer** (+0) is better than an incorrect answer (-0.25). With that said, if you can eliminate one, especially two or more, answers, it is to your advantage to guess from the answer choices left. Avoid the "scattershot" approach of answering "C" all the way down as time runs out. On the **grid-in section**, if you don't know the answer, you should DEFINITELY guess. There is no penalty for a wrong answer. Any answer in a the grid has a better chance of being correct than no answer at all.
- ***Should I use scratch paper?***

You should do all of your scratch work in your test booklet and NOT on your answer document. There will be sufficient space in the test booklet, and you will also be able to mark up and label existing diagrams.

- ***Can I jump to other sections or go back to previous sections on the SAT?***
  No. Each sections in timed and closed.
- ***Should I work the easy questions first?***
  Remember that questions getting increasingly difficult as you go through the test, so I would recommend working them in the numeric order in which they are presented. If you find yourself, though, spending 30 seconds or more on a question with no progress or insight, mark it and move on. You may actually find the more challenging questions at the end easier since you will have practiced these more.
- ***Can I skip the "equating" or experimental portion of the exam?***
  You will NOT know which section this portion is. It will look and feel like the other vital sections. Do not take the risk of guessing which section it is and leaving it undone. True, the experimental section will resemble another section, but you will not know which is which. Take the entire test to the best of your ability.
- ***What about the ACT?***
  The ACT was developed in the 1960's as an alternative to the SAT for students applying chiefly to Midwestern and Southern vocational, mechanical, and agricultural schools. Today, it is accepted in lieu of the SAT by most colleges. Although it is more of a basic skills test and less of an academic reasoning test than the SAT, you should consider taking the ACT at least as an insurance policy for your college application. If your ACT percentile score is much better than your SAT score, you might want to submit your ACT scores instead of, or addition to, your SAT scores. You can find out more about the ACT testing program at www.act.org.
- ***What should I do in the days leading up the SAT exam?***
  - Take another practice test.
  - Review strategies, test format, formulas, and common mistakes.
  - Get plenty of rest.
  - Visualize your success.
  - Exercise a bit.
  - Don't cram.
  - Affirm to yourself that you're prepared and ready.
- ***What about the night before?***
  - Enjoy some TV.
  - Eat a healthy dinner.
  - Go to bed early.
  - Familiarize yourself with directions to the site, parking lots, start times, etc.
  - Lay out everything you'll need for test day.
    - Admission ticket
    - Photo ID
    - Several #2 pencils with erasers
    - Calculator with fresh batteries
    - Stopwatch/wristwatch (cell phones are not allowed)
    - Light snack
    - Earplugs (if you'd like to block out noise)
    - Light jacket (if you're cold-natured)
    - Facial tissues or handkerchief
    - Your Brain
- ***What do need to do on the morning of the actual exam?***

- Rise early, do a little exercise to get the blood going, and eat a light, healthy breakfast.
- Dress comfortably and/or in layers to adjust for temperature variations at test site.
- Leave earlier than you need to avoid traffic or to allow for unforeseen delays. Arriving early and getting to your location with time to spare will put you at ease.
- Don't be psyched out by others. Stay confident and implement YOUR plan.
- Use the bathroom before entering the test room.
- Don't panic during the test. Keep your reptilian brain dormant. Do your best and forget the rest.
- Pace yourself on sections, taking deep breaths and pausing when anxiety creeps up.
- Stay positive, smile, have fun.