

Sat Math Cheat Sheet

Discriminant \rightarrow # of solutions
 $b^2 - 4ac$ is $+$ \rightarrow 2 solutions
 $\dots\dots$ zero \rightarrow 1 solution
 $\dots\dots -$ \rightarrow no solution

For nonzero constants a, b, c, p, q and r
 IF: $ax^2 + bx + c = px^2 + qx + r$, for all values of x .
 THEN: $a=p$, $b=q$ and $c=r$

$i = \sqrt{-1}$ $i^2 = -1$ $i^3 = -i$
 $i^4 = 1$
 any i raised to the power that's a multiple of 4 is 1.

MEAN: influenced by outliers
 MEDIAN: resistant to outliers

Subtract/Add: Measures of Spread are unaffected (Range, SD)
 Margin of error: half of range
 Ex: (16, 42) = $\frac{42-16}{2} = 13$

Percent change (Increase or Decrease) = $\frac{\text{Amount of change}}{\text{Original value}} \times 100\%$
 New value = original value $(1 + \text{percent change})$

Direct Variation
 When x and y are directly proportional:
 $y = kx$ and $\frac{y_1}{x_1} = \frac{y_2}{x_2}$

When x & y are in direct proportion, they will form a line that passes through the origin

Arithmetic Mean
 Number of values \times Average of values = Sum of values

MEDIAN
 $\frac{n+1}{2}$

Exponential growth and decay
 $y = ab^x$
 $a \rightarrow$ starting value
 $b \rightarrow$ growth factor
 $b > 1 \rightarrow$ growth
 $0 < b < 1 \rightarrow$ decay

Sum of degree measures of interior angles
 $180(n-2)$

Sum of measures of exterior angles of any polygon is 360°

The measure of an inscribed angle is half the measure of the central angle

The long diagonal of a cube with edges of length s will always have a length of $s\sqrt{3}$

Similar Triangles
 \rightarrow same angles
 \rightarrow corresponding sides are proportional

AA
 SAS
 SSS

Pythagorean Triples
 ① 3, 4, 5 ③ 8, 15, 17
 ② 5, 12, 13

And all their multiples
 Ex: 6, 8, 10

Degree measure of central \angle = $\frac{\text{Arc length}}{360^\circ} = \frac{\text{Area of sector}}{\text{Area of whole}}$

Length of long diagonal
 $\sqrt{l^2 + w^2 + h^2}$

Volume:
 Area of base \times Height

Sat math cheat sheet can be an invaluable tool for students preparing for the SAT. The SAT Math section assesses a range of mathematical skills, including algebra, problem-solving, data analysis, and advanced math concepts. Understanding the structure of the exam and having a solid grasp of essential formulas and strategies can significantly enhance your performance. In this article, we will explore key concepts, formulas, and strategies that can be included in your SAT Math cheat sheet.

Understanding the SAT Math Section

The SAT Math section is divided into two parts: one that allows the use of a calculator and one that does not. This section comprises a total of 58 questions, with 20 questions in the no-calculator portion and 38 in the calculator-allowed portion. Here's a breakdown of what to expect:

Question Types

The SAT Math section includes three main types of questions:

1. Multiple-choice questions: Students select the correct answer from a set of options.
2. Grid-in questions: Students provide their answer in a grid format, requiring them to generate their responses without multiple-choice options.
3. Word problems: These questions often involve real-world scenarios and require students to set up equations or expressions to solve them.

Topics Covered

The SAT Math section covers various topics, which can be categorized into two main areas:

- Heart of Algebra: Focuses on linear equations, inequalities, and systems of equations.
- Problem Solving and Data Analysis: Emphasizes ratios, percentages, and interpreting data from tables and graphs.

Additionally, questions may delve into advanced math concepts, including:

- Complex numbers
- Polynomials
- Functions

Essential Formulas for Your Cheat Sheet

Creating a cheat sheet for SAT Math should include important formulas that are frequently tested. Here's a compilation of essential formulas you should know:

Algebra

- Slope of a line:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

- Equation of a line (slope-intercept form):

$$y = mx + b$$

- Quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

\]

- Factoring a quadratic:

$$\backslash (ax^2 + bx + c = (px + q)(rx + s) \backslash$$

Geometry

- Area of a rectangle:

\[

$$A = l \times w$$

\]

- Area of a triangle:

\[

$$A = \frac{1}{2} \times b \times h$$

\]

- Circumference of a circle:

\[

$$C = 2\pi r$$

\]

- Area of a circle:

\[

$$A = \pi r^2$$

\]

- Pythagorean theorem:

\[

$$a^2 + b^2 = c^2$$

\]

Statistics

- Mean:

\[

$$\text{Mean} = \frac{\sum\{X\}}{n}$$

\]

- Median: The middle value when data is arranged in ascending order.

- Mode: The value that appears most frequently in a data set.

- Standard deviation (σ): Measures the dispersion of a set of data points.

Trigonometry

- Basic trigonometric ratios:

$$\begin{aligned} \sin(\theta) &= \frac{\text{opposite}}{\text{hypotenuse}}, \quad \cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}}, \quad \tan(\theta) = \frac{\text{opposite}}{\text{adjacent}} \end{aligned}$$

- Pythagorean identity:

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

Key Strategies for SAT Math

In addition to formulas, having effective strategies can make a huge difference in your performance on the SAT Math section. Here are some helpful strategies:

1. Familiarize Yourself with the Format

Understanding the format of the SAT Math section helps you manage your time effectively. Practice with real SAT questions to become comfortable with question types and pacing.

2. Use Process of Elimination

When encountering multiple-choice questions, use the process of elimination to narrow down your options. This technique increases your chances of selecting the correct answer, especially if you are unsure.

3. Don't Spend Too Long on One Question

If you find a question particularly difficult, move on and return to it later if time allows. It's better to answer as many questions as possible than to get stuck on a single problem.

4. Show Your Work

For grid-in questions, it's crucial to show your work, as it helps you identify mistakes and clarify your thought process. Additionally, it can help in double-checking your calculations.

5. Practice Mental Math

While the calculator section allows the use of a calculator, practicing mental math can save you time and enhance your confidence. Focus on quick calculations for fractions, percentages, and basic algebra.

6. Review and Revise

After practicing questions, review your mistakes to understand where you went wrong. This analysis can help strengthen your understanding and reduce similar mistakes in the future.

Practice Resources

To further prepare for the SAT Math section, consider utilizing the following resources:

- Official SAT Practice Tests: Available on the College Board website, these practice tests provide an authentic test-taking experience.
- Khan Academy: Offers free SAT practice resources tailored to your skill level.
- SAT Math Prep Books: Books such as "The College Board's Official SAT Study Guide" and "Barron's SAT Math" offer comprehensive strategies and practice problems.

Conclusion

In summary, creating a **sat math cheat sheet** can be a powerful study tool as you prepare for the SAT. By including essential formulas, understanding the types of questions, and employing effective strategies, you can enhance your performance on the Math section. Remember to practice regularly and review your progress, as consistent effort will lead to improvement. Good luck with your SAT preparation!

Frequently Asked Questions

What is a SAT math cheat sheet?

A SAT math cheat sheet is a condensed reference guide that summarizes key formulas, concepts, and problem-solving strategies commonly tested on the SAT math section.

What topics should be included in a SAT math cheat sheet?

A SAT math cheat sheet should include topics such as algebra, geometry, trigonometry, data analysis, and key formulas like the Pythagorean theorem and quadratic formula.

Are SAT math cheat sheets allowed during the test?

No, SAT math cheat sheets are not allowed in the test room. However, they are useful for study and preparation purposes.

How can I create an effective SAT math cheat sheet?

To create an effective SAT math cheat sheet, focus on summarizing formulas, common problem types, and shortcuts. Use clear headings, bullet points, and visual aids like graphs or charts.

Where can I find pre-made SAT math cheat sheets?

Pre-made SAT math cheat sheets can be found online through educational websites, tutoring services, and study guide platforms. Many students also share their own versions in forums.

How can a SAT math cheat sheet improve my test performance?

A SAT math cheat sheet can improve test performance by helping you quickly recall important formulas and strategies, allowing you to solve problems more efficiently during the exam.

How do I effectively use a SAT math cheat sheet while studying?

Use a SAT math cheat sheet as a quick reference while practicing problems. Familiarize yourself with the content, and test yourself by covering the answers and recalling the formulas.

Can I customize my SAT math cheat sheet?

Yes, you can and should customize your SAT math cheat sheet to suit your learning style. Include formulas and concepts that you find challenging or frequently forget.

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