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Equations to remember for the sat

SAT math test is different from any math test you did before. It is designed to take concepts that you are accustomed to and apply in new ways (and often strange). It's complicated, but with attention to detail and knowledge of the basic formulas and concepts covered by the test, you can improve your score. So what formulas do you need to have memorized for the SAT math section before the test day? In this complete guide, I will cover every critical formula you need to know before sitting down for the test. I'll explain to her if you need to remember how a formula works. If you understand each formula in this list, you save valuable time on the test and probably get some extra correct questions. Formulations dates on the SAT, Explained This is exactly what you will see at the beginning of both mathematical sections (the calculator section and no calculator section). It can be easy to look right away, so familiarize yourself with formulas now to avoid waste of time on the test day. You get 12 formulas on the test itself and three geometry laws. It can be useful and save time and effort to memorize the given formulas, but it is ultimately useless, as they are given on each SAT mathematical section. You are given only geometry formulas, so priority memorize algebra and trigonometry formulas before the test day (we will cover them in the next section). You should focus most of your study effort on algebra anyway, because geometry has been underlined on the new SAT and now only composes 10% (or less) of questions on each test. However, you need to know what data geometry formulas mean. The explanations of these formulas are as follows: Area of a circle $S_A = \pi r^2$ it is a constant that can, for the purposes of SAT, be written as 3.14 (or 3.14159) r is the circle radius (any line taken from the point directly at the rim) Circumference of a circle $SC = 2\pi r$ (or $SC = \pi d$) d is the diameter of the circle that bisects the circle through the middle point and touches two ends of the circle on opposite sides. It's twice the radius. Area of a rectangle $S_A = lw$ l is the length of the rectangle w is the width of the rectangle Area of a triangle $S_A = 1/2bh$ b is the length of the base of triangle (the edge of one side) h is the height of the triangle In a right triangle, the height is the same as one side of the angle of 90 degrees. For unrighted triangles, the height will descend through the inside of the triangle, as shown above (unless otherwise given). The Pythagorean Theorem $S_a^2 + b^2 = c^2$ In a right triangle, the two smaller sides (a and b) are each squared. Their sum is equal to the square of the hypotenuse (c , longer side of the triangle). Special right triangle properties: Triangle of Isosceles A isosceles triangle has two equal sides in length and two equal angles in front of those sides. A right isosceles triangle always has a 90-degree angle and two 45-degree angles. Side lengths are determined by the formula: Sx , Sx , $Sx\sqrt{2}$, with hypotenuse (adverse side 90 degrees) with a length of one of the smallest sides $\sqrt{2}$. For example, a right isosceles triangle can have side lengths of 125, 125, and $172\sqrt{2}$. Special right triangle properties: 30, 60, 90 Grade A Triangle 30, 60, 90 triangle describes the degree measures of the three corners of the triangle. Side lengths are determined by the formula: Sx , $Sx\sqrt{3}$ and $2x$ The opposite side 30 degrees is the smallest, with a measure of Sx . The opposite side 60 degrees is the average length, with a measure of $Sx\sqrt{3}$. The opposite side 90 degrees is hypotenuse (longer side), with a length of $2x$. For example, a 30-60-90 triangle can have side lengths of 5, $5\sqrt{3}$ and 10. Volume of a solid rectangular $S_V = lwh$ l is the length of one of the sides, h is the height of the figure, w is the width of one of the sides. Volume of a cylinder: S_h is the height of the cylinder. The volume of a Sphere $S_V = (4/3)\pi r^3$ r is the range of the ball. $S_A = \pi r^2$ r is the radius of the circular side of the cylinder. Law: the number of degrees in a circle is 360 Law: the number of radians in a circle is 2π Read: the number of degrees in a triangle is 180 Gear on that brain because here come the formulas you need to memorize. Formulas not given on the test For most formulas in this list, simply attach them and store them (discussed). Some of them, however, may be useful to know, but are ultimately not necessary to store, as their results can be calculated by other means. (It is still useful to know these, however, then treat them seriously). We broke the list in "Need to Know" and "Good to Know", depending on whether you are a test lover of the formula or a type of test less-formulas-the-better. Pistes and graphs should know the formula of the line Dates two points, $S_A(x_1, y_1), S_B(x_2, y_2)$, find the slope of the line that connects them: $S_y = (y_2 - y_1)/(x_2 - x_1)$ The slope of a line is the S_y (vertical change)/(horizontal change) How to write the equation of a line The equation of a line is written as: $Sy = mx + b$ If you get an equation that is NOT in this form (ex $Smx - y = b$), then re-write it in this format! It is very common for the SAT to give you an equation in a different form and then ask if the slope and interception are positive or negative. If you don't do it, the equation in $Sy = mx + b$, and misinterpret what the slope or intercept is, you will get this wrong question. m is the slope of the line, b is the interception y (the point where the line affects the y axis). If the line passes through the origin $(0,0)$, the line is written as $Sy = mx$. Good to know Midpoint formula Dates two points, $S_A(x_1, y_1), S_B(x_2, y_2)$, find the central point of the line linking them: $S((x_1 + x_2)/2, (y_1 + y_2)/2)$ Date two points, $S_A(x_1, y_1), S_B(x_2, y_2)$, find the distance between them: $S\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ You do not need this formula, as you can simply chart your points and then create a right triangle from them. The distance will be the hypotenuse, which can be found through the Pythagorean theorem. You look good to know Length of an arc Date a radius and a degree measure of an arc from the center, find the length of the arc Use the formula for the multiplied circumference by the angle of the arc divided by the measure of the total angle of the circle $S_L(\text{arc}) = (2\pi r)(\text{degree measure of center of arc})/360$ E.g., 60 degrees arc is $1/6$ of total circumference because $60/360 = 1/6$ arc of a sector Use formula for the area multiplied by the angle of the arc divided by the measure of the total angle of the circle $S_A(\text{arc sector}) = (\pi r^2)(\text{degree measure of center of arc})/360$ An alternative to memorizing the "formula" is only to stop and think about arch circumferences and arc areas logically. Know the formulas for the area and circumference of a circle (because they are in your equation box given on the test). You know how many degrees are in a circle (because it is in your equation box given on the test). Now put the two together: If the arc covers 90 degrees of the circle, it must be $1/4$ of the total area/circumference of the circle because $90/360 = 1/4$. If you get an angle of 45 degrees, then it is $1/8$ of the circle, because $45/360 = 1/8$. The concept is exactly the same as the formula, but it can help you think it in this way instead of as a "formula" to be stored. Algebra need to know the Quadratic equation Given a polynomial in the form of $Sax^2 + bx + c$, solve for x . $Sx = (-b \pm \sqrt{b^2 - 4ac})/(2a)$ Just connect the numbers and solve for x ! Some of the polynomials you will encounter on the SAT are easy to evaluate (e.g. $Sx^2 + 3x + 2$, $S4x^2 - 1$, $Sx^2 - 5x + 6$, etc.), but some of them will be more difficult to assess and will almost be impossible to get with simple test and erratic mental math. In these cases, the square equation is your friend. Make sure you don't forget to make two different equations for each polynomial: one that is $Sx = (-b + \sqrt{b^2 - 4ac})/(2a)$ and one that is $Sx = (-b - \sqrt{b^2 - 4ac})/(2a)$. Note: If you know how to complete the square, then you don't have to memorize the square equation. However, if you are not completely comfortable with the completion of the square, then it is relatively easy to store the square formula and have it ready. I recommend memorizing it to the tuning of "Pop Goes the Weasel" or "Row, Row, Row Your Boat". Means to know The average is the same as the middle Find the average/media of a set of numbers/terms $S(\text{Mean}) = (\text{sum of the terms})/(\text{number of terms})$ Speed = $(\text{total distance})/(\text{total time})$ Probability of 0 will never happen. Percentages need to know Find x percent of a given number n . $S(n)(x/100)$ Find out that percent a number n is another number m . $S(m/n)$ Find out the number n is x per cent of. $S(n)(100)/x$ Trigonometry is one added to the new SAT section of 2016, composes less than 5% of mathematical questions, you will not be able to answer trigonometry questions without knowing the following formulas. You need to know Find the sine of a corner given the measurements of the sides of the triangle. J Measure of the opposite side to the angle / Measure of hypotenuse In the figure above, the sine of the labeled angle would be Sb/h . Find the thigh of a corner given the measurements of the sides of the triangle. $\#$ Measure of the side adjacent to the corner / Measure of the hypotenuse In the figure above, the little thing on the labeled corner would be Sb/h . Find the tangent of a corner given the measurements of the sides of the triangle. J Measure of the opposite side to the angle / Measure of the adjacent side to the corner In the figure above, the tangent of the labeled angle would be Sa/b . A useful memory trick is an acronym: SoHCAHTOA. Sine equals Opposite over Hypotenuse Cosine equals Adjacent on Hypotenuse Tangent equals Opposite over Adjacent SAT Math: Beyond formulas Although these are all the formulas you need (the ones you are given and the ones you need to memorize), this list does not cover every aspect of SAT mathematics. You will also have to understand how to evaluate equations, how to manipulate and solve absolute values, and how to manipulate and use exponents, and much more. These topics are all covered here. Another important thing to remember is that while memorizing the formulas in this article that you are not given on the test is important, knowing that this list of formulas does not mean that you are all ready for SAT mathematics. You also need to practice applying these formulas to answer questions, so that you know when it makes sense to use them. For example, if you are asked to calculate how likely a white marble is drawn by a vase containing three white marbles and four black marbles, it is easy enough to understand that you need to take this probability formula: $S(\text{Probability}) = (\text{number of desired results})/(\text{total number of possible results})$ and to find the answer: $S(\text{Probability of a white marble}) = (\text{number of white marbles})/(\text{total number of marbles})$ $S(\text{Probability of a white marble}) = 3/7$ on the sat math section, however, will perform group x consisted of 100 people watching the first time of bed, and group y consisted of 100 people watching the hours of bed. If a person is chosen randomly by those who have remembered at least 1 dream, what is the probability that the person belonged to group y ? a) 68/100 b) 79/100 c) 79/164 d) 164/200 there is a lot of information to sum up in that question: a data table, a long explanation of two-headers of the table, and then, finally, what you need to solve for. If you haven't been practicing these kinds of problems, you won't necessarily notice that you'll need that kind of probability formula you've stored, and it will take you a few minutes to take the table and shave your brain to figure out how to get the answer - minutes you can't now dash on other section issues or to check your work. If you have practiced these types of questions, however, you will be able to quickly and effectively distribute that stored probability formula and solve the problem: this is a question of probability, so probably (ha) need to use this formula: $S(\text{Probability of a result}) = (\text{number of the desired results})/(\text{total number of possible results})$ ok, then the number of desired is anyone in the Y Group who remembered at least one dream. These are the bold cells: from 1 to 4 5 or more Total Group $X28\ 57\ 100$ Group $Y\ 21\ 11\ 68\ 100$ Total $36\ 125\ 200$ And then the total number of possible results is all the people who remembered at least one dream. To get it, I must take away the number of people who did not remember at least one dream (36) from the total number of people (200). Now I will link it all to the equation: $S(\text{Probability of a result}) = (11+68)/(200-36)$ $S(\text{Probability of a result}) = (79)/(164)$ The correct answer is C) $79/164$ Takeaway from this example: Once you have memorized these SAT mathematical formulas, you need to learn when and how to use them by piercing yourself on practice questions. What's next? Now that you know the critical formulas for the SAT, it might be time to check out the full list of the knowledge and know-how of SAT mathematics that you will need before the test day. And for those of you with particularly high score goals, check our article on How a 800 on SAT mathematics from a perfect SAT-Scorer. Currently half-range scoring on mathematics? Do not look beyond our article on how to improve your score if you are currently scoring under the 600 range. Want to improve your SAT score of 160 points? Discover our best online SAT preparation courses. 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