General aptitude tricks pdf

Mathematical tricks and shortcuts are the easiest and fastest ways you can solve mathematical problems in upcoming government exams. Quantitative aptitude or numerical skills section are most commonly part of all major government exams, and if a candidate can get shortcut tricks to quickly resolve this section they may be able to score more generally in the exam. In this article, we gave the 10 mathematical tricks that will make the quantitative attitude section less than stress and easier to solve. Aspirants who are preparing for the next competitive exams can refer to these tricks. 10 simple math tricks and shortcuts 1. Square root Finding the square root of a number by estimating and multiplying can be a long procedure. Below is an easier way to find the square root of a number: Example: Find the square root of 2116 To find the square root of 2116: Step 1: See the digit in place. In this case, it's 6. Now, check between 1-9, the square of what all numbers have 6 in your house. The answer is 42 = 16 and 62 = 36 Step 2: Now check, whose square between 1 and 9 is closer to the first two digits of the given number. In this case, the sum between 1 and 9 is closer to 21. The answer is 42 = 16 and 52 = 25 So, a number between 44, 46, 54, and 56 is the square root of 2116 Step 3: The two numbers you got in step 2, multiply them each with the next number in the number series. That is, 4×5 = 20 and 5×6 = 30. From 20 it is a number closer to 21. The answer must be 46 or 44. Multiply and check your response. Check yourself with the example above: Example: What is the square root of 1024? Solution: Step 1: 22 = 4 and 82 = 64 Step 2: 32 = 9 Step 3: 3×4 = 12. Since 12 is greater than 10. So the square root will be 32. 2. Cube root Follow the steps below to quickly discover the cube root of a number. Example: What is the root of the cube of 9261 Step 1: Find the numbers between 1 and 9 whose cube is equal to the digit in place of one, here is 1. So, we get 1×1×1 = 1 Step 2: See the first digit of the number, in this case, 9. 9 is located between the cube of 2 (2×2×2=8) and (3×3×3 = 27). Since 8 is the closest to 9. The root of the cube of 9261 is 21. Note: To find the root of the 5-digit cube, use the first two digits instead of the first digit in step 2 Try an example yourself to understand the trick even better: Example: What is the root of the cube of 32768 Step 1: 23 = 8 Step 2: 33 = 27 and 43 = 64 Since 27 is closer to 32, the cube root of 32768 will be 32. Candidates who are looking for shortcut tricks to calculate the square and cube of a number can visit the linked item. 3. Quadratic Equations Of two examples of quadratic equations solved with easy tricks to quickly find the answer are given: Example: $x^2 – 18x + 45 = 0$ Step 1: Multiply the coefficient of x^2 and the constant in the equation. In this case, 1×45 = 45 Step 2: Multiply -1 with the coefficient of x. In this this -1× (-18) = 18 Step 3: So, the value of x will be 15 and 3 (3+15=18 & 3×15=45). Remember, for signs, if the answer obtained in both steps 1 & 2 is positive, then both values of x will be positive. If even one is negative, then the values of x will be negative. Here, the value obtained in step 1 & 2 is positive so the value of x will be positive. Thus, the answer is x = 15, 3 Example: x^2-5x-6 = 0 Step 1: Multiply the coefficient of x^2 and the constant in the equation. In this case, 1×(-6) = (-6) Step 2: Multiply -1 with the coefficient of x. In this case, (-1)× (-5) = 5 Step 3: So, the value of x will be 6 and 1 (6-1=5 & 6×1=6). Remember, for signs, if the answer obtained in both steps 1 & 2 is positive, then both values of x will be positive. If even one is negative, then one of the values of x will be negative. Step 4: Here the answer in step 1 is no. Therefore, a value of x will be negative. If the answer in step 1 is negative, the smallest value of x will be negative. If the answer in step 2 is negative, the largest value will be negative. So, x= 6, -1 Learn more about such equations and get the best tips for solving quadratic equations in the linked article. 4. Number Series If a candidate is confused about the system followed in a number series, the easiest way to find the difference between two numbers in the series. Example: 46 62 87 123 ? Solution 236: Step 1: Start by searching for the difference between two Step 2 numbers: Once you find the difference, you'll notice that the model with the number square has been followed. 42 = 16 52 = 25 62 = 36 72 = 49 82 = 64 For any other question posed in numerical series format and the candidate faces any kind of confusion in following the model, he can directly find the difference between two numbers in the series, he must facilitate resolution. Candidates can visit the Numerical Series page to learn more about the concept and types of questions that can be asked in this topic. 5. Compound interest Given below are some formulas that can save you some time during the exam while solving compound interest issues: (a) If the compound interest is x% for the 1st time interval and is y% for the second time interval, so, net effective interest rate after 2 intervals = x + y+ (xy/100) Note: This is applicable if both time intervals are equal) (b) If a sum of money, say P, equals A1 over a certain period of time, such as T, Compound Interest, and the same amount of money amounts to A2 in time 2T to Compound Interest, Then, P/A1 = A1/A2 (c) If a sum of money , such as P, amounts to A1 over a certain period , such as T, compound interest, and the same amount of money amounts to A2 after T+1 years with compound interest Then, Interest rate = {(A2-A1) / A1} × For example: Raj pays compound interest at 16% annually to Shyam, which is composed quarterly. What is the annual effective interest rate paid by Raj? Solution: Annual interest rate = 16% So, interest is paid that makes a installment of 4 times. Therefore, the interest rate per quarter = 16/4 = 4% Using (a) x + y+ (xy/100). 4 + 4 + {(4×4)/100} = 8 + 0.16 = 8.16% for two quarters For four quarters, 8.16% + 8.16% = 16.32% 6. Simple interest Refer to the following formulas and save time while solving questions in the final exam for the quantitative section: (a) Difference between simple and compound interest for 2 years = {(PR)2/ (100)2} (b) Difference between simple and compound interest for 3 years = {PR2 (300+R) / 1003} For example: The difference between simple interest and compound interest for two years, out of a certain amount of money at 4% per year is rs.800, if added annually. What is the amount of money on which interest has been earned? Solution: Following (a) CI-SI = {(PR)2/ (100)2} ⇒800 = {(P×4)2/ (100)2} ⇒P = Rs. 707.11 Applicants can check the quantitative aptitude program for various government exams to the related article. 7. Time & Work Below is an easier way to find out how long it takes to complete a job done by three people, when working together: Example: Three workers, Ajit, Sumit & Ramesh take 10, 8 and 20 days to complete the same work respectively. How long does it take for all three of us to work together? Solution: LCM of 10, 8 and 20 = 40 Ajit efficiency = 40/10 = 4 Sumit efficiency = 40/8 = 5 Ramesh efficiency = 40/20 = 2 Time Taken from all three set = {(LCM) / (Efficiency of all three)} = 40/11 days So to calculate the time it takes to complete the same work of 3 people = (Total Work Unit) / Efficiency of all works) For more information on the concept of time and work and the best tips to solve questions based on this topic, candidates can visit the linked article. 8. Approximation Simple multiplication is something that consumes the maximum of our time while solving math questions in competitive exams. Below is a shortcut to multiplying two numbers that can help you with approximation and simplification questions. Example: Solve 32 × 34 Step 1: Multiply the first number (in this case, 32) with the digit instead of ten in the second number (in this case, 3) We get, 32×3 = 96 Step 2: Add a 0 to the answer obtained in step 1. So the number now becomes 960 Step 3: Multiply 32 with the digit of one in the second number, we get, 32×4 = 128 Step 4: Add the result obtained in step 2 & step 3. So the answer is 960 + 128 = 1088 Solve multiple same questions based on Simplification and Approximation in the linked article. 9. Rule 72 Rule 72 is used to resolve issues where a certain amount of money must be doubled over a given period of time with a certain interest rate. Formulas to remember: years invested = 72/ Annual investment rate = 72/ Number of years Investment rate invested x Number of years invested = 72 For example: if Raj has invested Rs.500/- in a friend's business, how long does it take for Raj's investment, if the interest rate is 8%? Solution: So, according to the rule of 72, duration of time when the amount will be doubled at the interest rate of 8% = 72/8 = 9 years 10. Mix & Alligation Below is a mathematical trick to solve the mixture and alligation questions frequently asked in government exams more quickly and easily. Formula to remember: for example: a shopkeeper mixes two varieties of legumes worth Rs.50 per kg and Rs.75 per kg respectively. In what ratio the shopkeeper must mix these two pulses, making the average cost of the mixture Rs. 65 per kg. Solution: Cheapest quantity / Most expensive quantity = (75-65) / (65-50) = 10/15 = 2:3 Those who are not very familiar with the concept of Mixture and Alligation can visit the linked article to learn more about the concept, types of questions that can be asked and get some sample questions along with their support solutions. To learn more about the other topics in the quantitative attitude section, check out the links provided below: Tips To Ace Quantitative Aptitude Section The mathematical tricks and shortcuts provided above will only be useful if a candidate has built strong foundations. For aspirants who don't have a strong command over quantitative questions, they can check out the quantitative aptitude tips provided below for their assistance: Build Your Basics Strong – If the foundation isn't stable, going further can be difficult. Therefore, a candidate must spend enough time on each topic and make sure that the basics are as clear as only then would candidates be able to analyze which mathematical tricks to apply where to get the right formulas - Not only learn the formulas, but also understand where they can be applied so that time can be saved while solving questions from the different topics Understand the question - Before you start solving a question, read it and understand it and then start solving it with the simplest and shortest approach in mind to ensure that you do not waste time Practice and Practice - Once a candidate understands the concept, he has to solve more and more questions based on the same to get a block of the concept Create Table & Charts - In case the question is long and solve it takes a long time , create tables and charts to simplify the data provided Correct time management: Many candidates end up wasting time on a particular question. Unknvably, a candidate ends up wasting valuable time that could be entrusted with other questions. The quantitative aptitude tips above will help candidates prepare for the various upcoming competitive exams and help them score more in this particular section. Candidates can refer to the mathematical tricks mentioned above and the tips of as they will simplify applications for them and also save them a lot of time. At first, these tricks may seem longer, but with practice, candidates will be able to solve multiple questions in a shorter period of time. For any other updates or related information exams, candidates can contact BYJU for help. Guide.