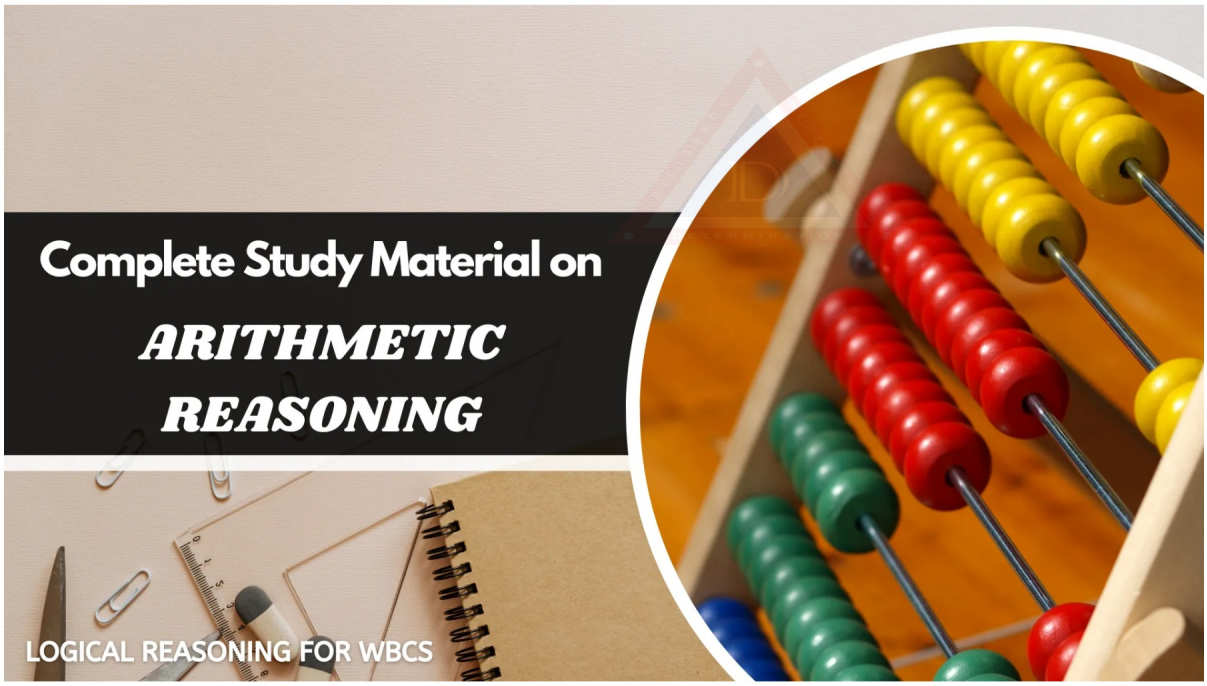
Arithmetic Reasoning - Complete Study Material for WBCS Exam

The West Bengal Civil Services (WBCS) examination stands as a defining challenge for those who aspire to serve the public and contribute to the administration of this culturally rich state. A gateway to prestigious careers in civil services, the WBCS exam is renowned for its rigorous selection process. Amid the multitude of subjects and topics, "Arithmetic Reasoning" emerges as a cornerstone in the realm of reasoning and problem-solving.

Our blog is meticulously crafted to serve as your comprehensive resource for mastering Arithmetic Reasoning, the keystone to your WBCS exam preparation. We will unravel the meaning of Arithmetic Reasoning, explore its various types with real-world examples, and present a step-by-step guide to help you become proficient in this domain. Recognizing that practice is the key to mastery, we have included an array of practice questions to sharpen your Arithmetic Reasoning skills. By the end of this blog, you will be well-prepared to tackle Arithmetic Reasoning-based questions with confidence and precision, thereby enhancing your prospects of success in the West Bengal Civil Services examination. Let's embark on this journey together and unlock the door to your WBCS ambitions!



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What is Arithmetic Reasoning?

Arithmetic Reasoning is a cognitive and problem-solving skill that involves the ability to analyze and comprehend numerical information, perform mathematical operations, and make logical deductions based on given numerical data.

Arithmetic Reasoning can be asked in two forms:

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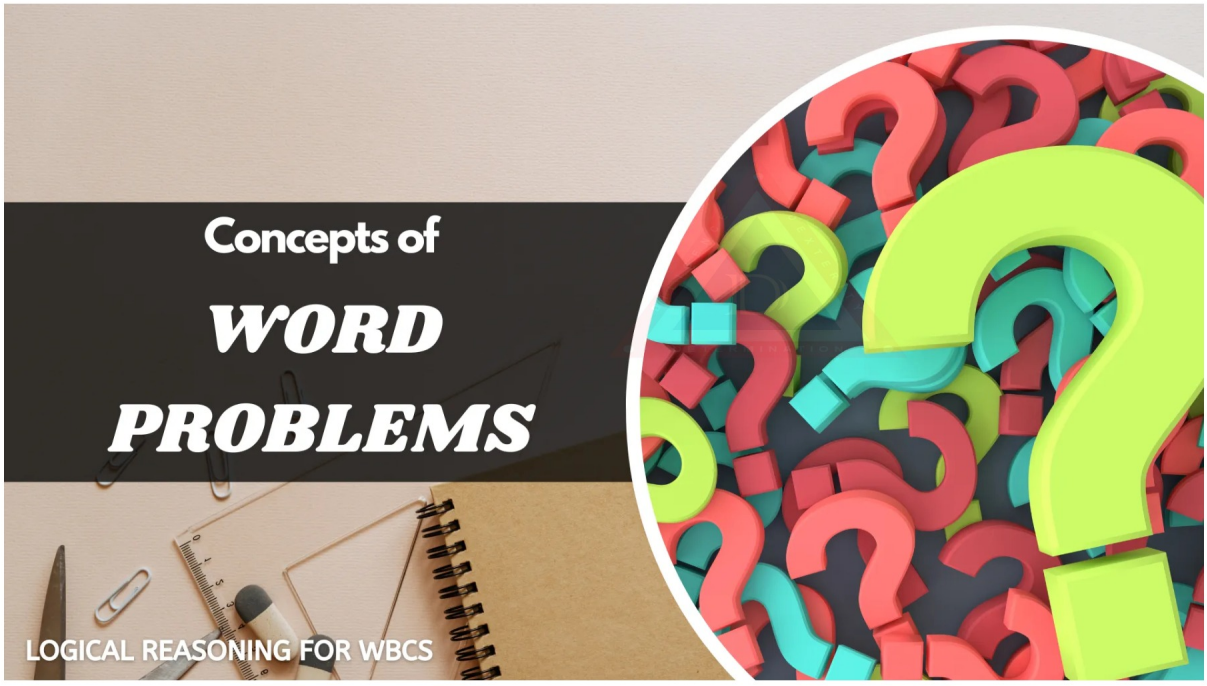
1. Word Problems
2. Symbol and Notation

Arithmetic Reasoning - Word Problems

In Word Problems based Arithmetic Reasoning, problems based on Age, Ratio and Proportion, Income and Expenditure, Profit and Loss and other data based questions are asked. Students need to solve these questions by using rules of mathematics.



[Source: The Dhronas]

Arithmetic Reasoning - Symbol and Notation

Symbol and Notation is the part of arithmetic reasoning, where mathematical operations deal with operators of Addition, Subtraction, Multiplication and Division. These are the basic operation and also having less than, greater than, equal sign operators.

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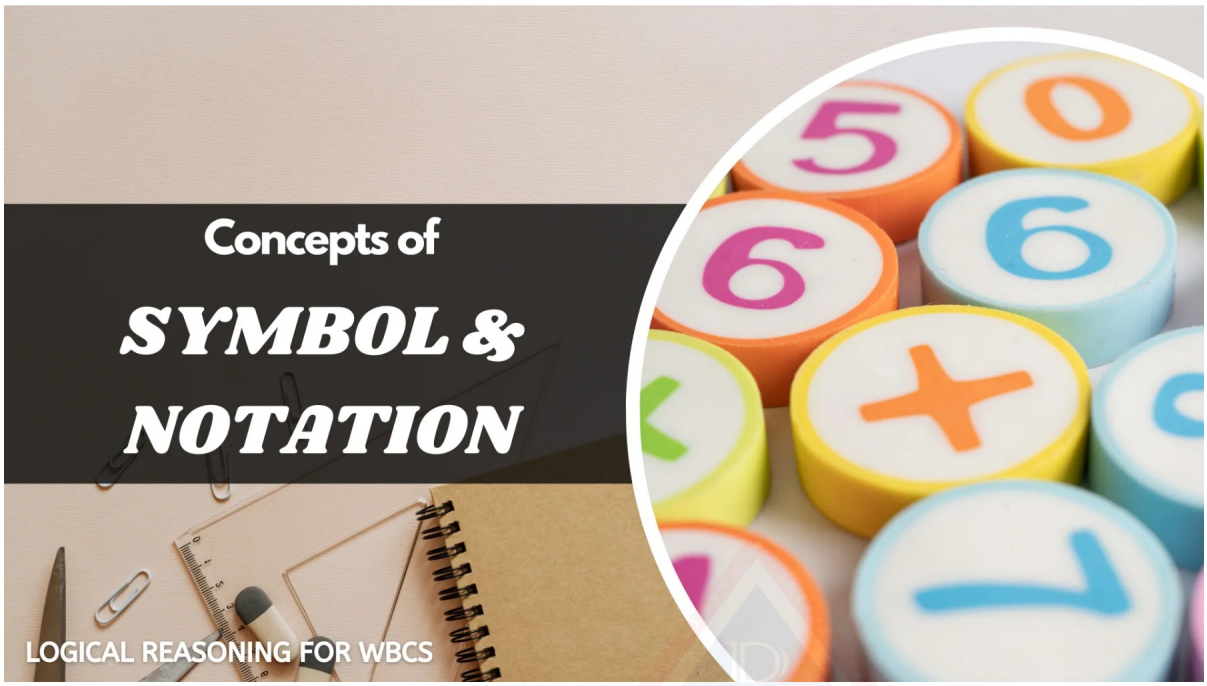

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The Symbol and Notation Based Type is again sub divided into the following:

Sign Interchange based Symbol & Notation

In such type of question, one equation is given, in which we have to interchange some signs with each other in order to equate LHS and RHS.

Example: Which two signs should be interchanged to make the following equation correct?
14 + 12 × 18 ÷ 6 – 12 = 6

Solution: ÷ and ×
The expression becomes: 14 + 12 ÷ 18 × 6 – 12
⇒ 6 is equal to 6.

Number Interchange based Symbol & Notation

In such type of question, one equation is given, in which we have to interchange some numbers with each other in order to equate LHS and RHS.

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Example: Which two numbers should be interchanged to make the given equation correct?
27 + 11 × 9 – 36 ÷ 4 = 67

Solution: After replacement, the equation becomes
27 + 11 × 4 - 36 ÷ 9
⇒ 67 = 67

Sign Fill-Up based Symbol & Notation

In such type of question, one equation is given, in which you have to fill appropriate signs, in order to equate LHS and RHS.

Example: Select the correct combination of mathematical signs to replace * signs and to balance the given equation.
16 * 6 * 4 * 24

Solution: × ÷ =
Given equation: 16 * 6 * 4 = 24
After replacement the equation becomes: 16 × 6 ÷ 4 = 24
⇒ 24 = 24

Coded Equation based Symbol & Notation

In such type of questions, the symbols are coded with another new symbols and students have to solve the equation using those new symbols in equation.

Example: In a certain code, + represent multiply, – represent plus, × represent divide and ÷ represent minus.
Then what is the value of 23 + 5 - 85 × 5 + 18 ÷ 6 + 20

Solution: 23 + 5 - 85 × 5 + 18 ÷ 6 + 20
After replacing the signs: 23 × 5 + 85 ÷ 5 × 18 - 6 × 20
115 + 17 × 18 - 120
115 + 306 - 120
421 - 120 = 301

Now that you have learned the basic concepts of Arithmetic Reasoning, let us test the learning so far by practicing some questions. Given below are Arithmetic Reasoning Practice Questions followed by detailed solutions to each question. You should first try to solve all the questions yourself, and go through the solutions at the very end, to build a better understanding. This way, you will be able to assess your progress in a much better way.

So, let's start practicing.

Arithmetic Reasoning Practice Questions

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Q:1 After interchanging the given two numbers and two signs what will be the values of equations (I) and (II) respectively?
× and +, 3 and 9
I. 7 × 9 - 8 ÷ 2 + 3 II. 4 × 9 - 3 + 8 ÷ 2

1.0, 1

2.-26, -29

3.6, 0

4.12, 13

Q:2 By interchanging the given two signs and numbers which of the following equations will be correct?
× and ÷, 7 and 9

1.9 – 7 × 2 + 6 ÷ 3 = 11

2.9 + 4 × 3 – 7 ÷ 1 = 40

3.8 × 3 ÷ 6 + 9 – 7 = 14

4.9 × 3 + 4 ÷ 2 – 7 = 18

Q:3 Which two digits and signs need to be interchanged so as to balance the given equation?
65 + 13 - 119 ÷ 32 × 8 = 175

1.9 and 8; + and ÷

2.2 and 9; + and ×

3.8 and 3; × and ÷

4.5 and 8; - and ×

Q:4 Select the correct combination of mathematical signs to sequentially replace the × signs and to balance the following equation.
11 × 15 × 78 × 6 × 18 × 160

1.+, × , -, ÷, =

2.×, +, ÷, -, =

3.×, +, -, ÷, =

4.+, ×, ÷, -, =

Q:5 If '@' means 'addition', '%' means 'multiplication', ' ' means 'division' and '#' means 'subtraction', then find the value of the following expression.
29 @ 128 16 % 7 # 22

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1.47

2.58

3.63

4.23

Q:6 If A denotes '+', B denotes '×', C denotes '-' and D denotes '÷', then what will come in place of '?' in the following equation? (13 B 9) D 3 A (14 D 7) B 6 C 21 A (32 B 2) = ?

1.96

2.100

3.112

4.94

Q:7 The ratio of the present ages of Asha and Lata is 5 : 6. If the difference between their ages is 6 years, then what will be Lata's age after 5 years?

1.40

2.45

3.41

4.35

Q:8 The total of the ages of Amit and Suvarna on 1 January 2015 is 61 years. Amit is three years younger than Survana. What was the age of Survana on 1 January 2010?

1.29 years

2.32 years

3.27 years

4.24 years

Q:9 Arun is celebrating his birthday today. On his next birthday, he will be twice his age that was 12 years ago. How old is Arun today?

1.24 years

2.25 years

3.26 years

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4.27 years

Q:10 Anusri is eleven years younger than Yashomati. Fifteen years from now, Yashomati's age will be three times Anusri's present age. What is Yashomati's present age?

1.21 years

2.24 years

3.20 years

4.23 years

Solutions of Arithmetic Reasoning Practice Questions

Q:1 (2) Given conditions: × and +, 3 and 9
After interchanging the expression becomes:
I. 7 + 3 - 8 ÷ 2 × 9 = -26
II. 4 × 9 - 3 + 8 ÷ 2 = - 29

Q:2 (3) Given conditions: × and ÷, 7 and 9
1. 9 – 7 × 2 + 6 ÷ 3 = 11
After interchanging the expression becomes:
= 7 – 9 ÷ 2 + 6 × 3 = 11 = 20.50 is not equal to 11.
2. 9 + 4 × 3 – 7 ÷ 1 = 40
After interchanging the expression becomes:
= 7 + 4 ÷ 3 – 9 × 1 = 40 = -0.66 is not equal to 40.
3. 8 × 3 ÷ 6 + 9 – 7 = 14
After interchanging the expression becomes:
= 8 ÷ 3 × 6 + 7 – 9 = 14 = 14 is equal to 14.
As we have found our answer, so, there is no need of checking other options.

Q:3 (1) 9 and 8; + and ÷
The expression becomes:65 ÷ 13 - 118 + 32 × 9 = 175
As we have found our answer, we need not to check the other options.

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Q:4 (2) Sequentially replacing × sign with +, × , -, ÷, =
11 + 15 × 78 - 6 ÷ 18 = 160
11 + 15 × 78 - 6 ÷ 18 = 1180.67
Sequentially replacing × sign with ×, +, ÷, -, =
11 × 15 + 78 ÷ 6 - 18 = 160
In hit and trial the correct placement of signs is found in second step only.
× in equations must be replaced with ×, +, ÷, -, = in order to make the equation correct.

Q:5 (3) The expression becomes: 29 @ 128 $ 16 % 7 # 22 = 63

Q:6 (4) Given conditions: A denotes '+', B denotes '×', C denotes '-' and D denotes '÷'
After replacement the equation becomes:
⇒(13 × 9) ÷ 3 + (14 ÷ 7) × 6 - 21 + (32 × 2)
⇒94

Q:7 (3) Let Asha's age be 5x and Lata's age be 6x.
Given: 6x - 5x = 6
⇒x = 6
Thus, Lata's current age = 6x = 6 × 6 = 36
So, Lata's age after 5 years = 36 + 5 = 41 years.

Q:8 (3) Age of Amit + 3 = Age of Suvarna
The total of the ages of Amit and Suvarna on 1 January 2015 = 61 years.
Age of (Amit + Suvarna) = 61 years
Age of (Amit + Amit + 3) = 61 years
Age of Amit = 29 years (in 2015)
Age of Suvarna on 1 January 2015 = Age of Amit + 3 = 29 + 3 = 32
Age of Suvarna on 1 January 2010 = 32 - 5 = 27 years

Q:9 (2) Let the present age of Arun = x
Age 12 years ago = x - 12
Age on next birthday = x + 1
x + 1 = 2(x - 12)
x = 25 years

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Q:10 (2) Let the age of Yashomati = x
Then age of Anusri = x - 11
According to the question;
15 + x = 3 (age of Anusri)
15 + x = 3 (x - 11)
x = 24
Age of Yashomati = 24years
Age of Anusri = x - 11 = 24 - 11 = 13years

As we bring this exploration of Arithmetic Reasoning for the West Bengal Civil Services (WBCS) exam to a close, it's essential to reflect on the knowledge and skills we've uncovered. Arithmetic Reasoning is more than just another subject on your syllabus; it's a cornerstone of reasoning that can significantly impact your performance in this challenging examination. I hope this blog has equipped you with the understanding and confidence needed to tackle Arithmetic Reasoning questions effectively, and I encourage you to continue practicing and refining your skills.

I invite you, our dedicated readers, to share your thoughts and experiences with us. Was this blog beneficial to your WBCS exam preparation? How did you perform on the practice questions provided? We value your feedback and would love to hear from you in the comment section below. Remember, The Dhronas is your ultimate destination for detailed study material and practice questions on every topic of reasoning tailored to help you excel in the WBCS exams. So, stay engaged, keep visiting, and continue your journey towards success in the West Bengal Civil Services examination. Your commitment and hard work will undoubtedly lead you to your desired destination.

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