Learn to Solve the Age Based Problems on Ratios for WBP Constable Exam

Embark on a strategic journey to conquer **age-based problems** on ratios with our dedicated resource designed for **WBP Constable Exam** aspirants. In the dynamic landscape of competitive exams, the ability to navigate through age-related mathematical challenges is crucial. This comprehensive guide not only demystifies the complexities of age-based problems but also equips candidates with efficient techniques to tackle ratio-related questions.

Aspirants will delve into practical examples, gaining a nuanced understanding of the intricate relationship between ages and ratios. This resource, tailored specifically for the WBP Constable Exam, serves as a compass for aspirants seeking precision in their problem-solving skills. Elevate your numerical acumen, build confidence, and lay a robust foundation for success in the WBP Constable Exam through our insightful guide on age-based problems and ratios.

This is the second part of the '**Ratios and Proportions**' Series. So, if you haven't read the Basics of Ratios and Proportions, read that first by clicking the embedded link.

Problems based on ages generally consist of information of ages of two or more people and their correlation with each other in the past or present or future. Problems are very easy to solve if we understand them.

Age Based Problems

Age-based problems in quantitative aptitude test your ability to solve problems involving the ages of different individuals. These problems often involve relative ages, age differences, age ratios, and time spans. Here are some common types of age-based problems in quant:

1. Age Difference Problems:

These problems involve finding the difference in age between two or more individuals. They often require you to set up equations based on the information provided and solve for the unknowns.

E.g. A is 5 years older than B. If A is 20 years old, how old is B?

2. Age Ratio Problems:

These problems involve working with the ratios of the ages of different individuals. They often require you to apply proportional reasoning and manipulate the ratios to solve for missing information.

E.g. The ratio of the ages of A and B is 3 : 4. If A is 15 years old, how old is B?

3. Age Progression Problems:

These problems involve finding the ages of individuals at different points in time. They require you to calculate the age changes based on the time elapsed and the given information.

E.g. A was 10 years old 5 years ago. How old is A now?

4. Age Comparison Problems:

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These problems involve comparing the ages of different individuals based on given information. They require you to carefully analyze the information and draw logical conclusions.

E.g. A is older than B, and B is older than C. Who is the youngest?

5. Age Mixture Problems:

These problems involve finding the average age of a group of individuals or the ages of individuals in a mixture based on their individual ages and proportions. They require you to apply weighted average calculations or ratio methods.

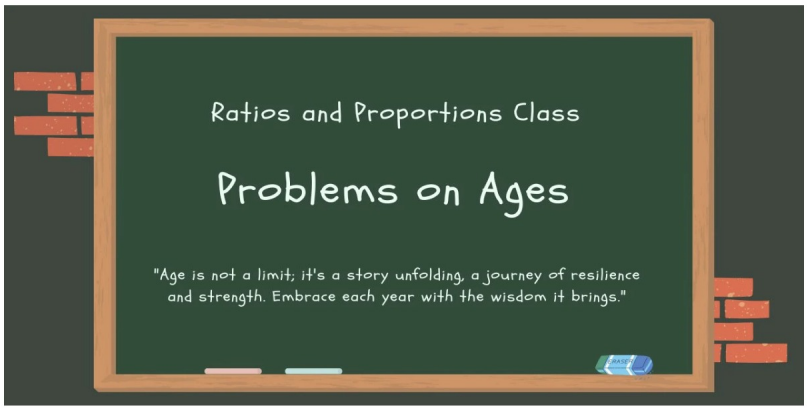
E.g. The average age of a group of 10 students is 15 years old. A new student joins the group, increasing the average age to 15.5 years. How old is the new student?

As clear from the title itself, we will discuss only the 2nd type here i.e. **Age Ratio Problems**.

Age Based Problems on Ratios

Age ratio problems in quantitative aptitude tests require meticulous attention and deft manipulation of ratios to solve for unknown ages. These problems, commonly encountered in aptitude assessments, test your ability to apply proportional reasoning and algebraic knowledge to practical scenarios involving the ages of individuals.

To successfully navigate these challenges, it's crucial to understand the key concepts involved. Ratios express the relative sizes of two or more quantities, and proportional reasoning allows you to leverage these relationships to derive unknowns. Additionally, age progression refers to the changes in age an individual undergoes over time, which plays a crucial role in many age ratio problems.



Basic Rules for problem based on Ages

Rule 1: If the ratio of present ages of A and B is x : y and n years ago, the ratio of their ages was p : q, then

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(kx - n)/(ky - n) = p/q,

where k is a constant.

E.g. The ratio of the ages of A and B at present is 3 : 1. Four years earlier, the ratio was 4 : 1. Find the present age of A.

Sol: Let the present ages of A and B be 3x and x years respectively.

Now, Four years ago, the ages of A and B = (3x - 4) and (x - 4) years respectively.

⇒ (3x - 4)/(x - 4) = 4/1

Doing cross multiplication,

(3x - 4) = 4 × (x - 4)

⇒ 3x – 4 = 4x - 16

⇒ 16 - 4 = 4x - 3x

⇒ x = 12

⇒ Present age of A = 3x = 3 × 12 = 36 years (**Ans.**)

E.g. The ratio between the ages of A and B is 3 : 5 and the sum of their ages are 56 years. The ratio between their ages 7 years ago was?

Sol: Age of A = 3/(3 + 5) × 56 = 3/8 × 56 = 21

⇒ Age of B = 56 – 21 = 35

⇒ 7 years ago, age of A and B was = (21 – 7), (35 – 7) = 14, 28

⇒ Ratio = 14/28 = 1/2 (**Ans.**)

We can do this calculation in mind too by taking less than a minute and save time for other questions.

Rule 2: If the ratio of present ages of A and B is x : y and after n years, the ratio of their ages will be p : q, then,

(kx + n)/(ky + n) = p/q,

where k is a constant.

E.g. At present, the ratio of the ages of Maya and Chhaya is 6 : 5 and fifteen years from now, the ratio will change to 9 : 8. Find the present age of Maya.

Sol: Let the present ages of Maya and Chhaya be 6x and 5x years, respectively.

After 15 years, (6x + 15)/(5x + 15) = 9/8

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⇒ 8 × (6x + 15) = 9 × (5x + 15)

⇒ 48x + 120 = 45x + 135

⇒ 48x - 45x = 135 -120

⇒ 3x = 15

⇒ x = 5

⇒ Present age of Maya = 6x = 6 × 5 = 30 years (**Ans.**)

The problems that we get in our WBP Constable Exam from this topic are a combination of both the rules that we have just studied. They also involve some concepts and knowledge of how to solve linear equations (that we will discuss in algebra).

Let us look at few examples and if you are now confident about this section, just try these questions by yourself before looking at my solution. Some of these questions were asked in the **WBP Constable** Exam. So, please take this section very seriously.

Examples on Age Based Problems for Better Understanding

E.g. The present age ratio of X and Y is 3 : 4. 5 years ago their age ratio was 5 : 7. What is the present age of Y? **[WBP Constable 2019]**

Sol: Let the present age of X and Y be 3x and 4x. 5 years ago,

⇒ (3x - 5)/(4x - 5) = 5/7

⇒ 21x - 35 = 20x - 25

⇒ x = 10

Present age of Y = 40 years (**Ans.**)

E.g. The sum of the present ages of father and son is 100 years. 5 years ago if their age ratio is 2 : 1, what will be their age after 10 years? **[WBP Constable 2019]**

Sol: Let the ages of father and son 5 years ago be 2x and x.

Present ages: 2x + 5, x + 5

So,

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⇒ 2x + 5 + x + 5 = 3x + 10 = 100

⇒ x = 30 years

After 10 years their ages would be: 2x + 15, x + 15

⇒ 75 years, 45 years (**Ans.**)

E.g. Sum of the present age of A and B is 55 years. 10 years ago the ratio of their ages was 4:3. What is the present age of A and B? **[WBP Constable 2019]**

Sol: Let, the present age of A = X and B = Y.

10 years ago the ratio of their age is 4 : 3.

The sum of their present age is:

X + Y = 55

⇒ X = 55 - Y

Accordingly,

(X - 10)/(Y - 10) = 4/3

⇒ 3X - 30 = 4Y - 40

⇒ 3X - 4Y = -10

Putting the value of X in this, we get,

⇒ 3 × (55 - Y) - 4Y = -10

⇒ 165 - 3Y - 4Y = -10

⇒ 7Y = 175

⇒ Y = 25

⇒ X = 30

So the present age of A and B are 30 and 25 respectively. (**Ans.**)

In conclusion, "Learn to Solve Age-Based Problems on Ratios" emerges as an indispensable tool for aspirants preparing for the WBP Constable Exam. This meticulously crafted resource not only imparts clarity on age-related mathematical intricacies but also instills confidence in candidates to adeptly handle ratio-based questions. Aspirants, having navigated through practical examples and honed their problem-solving skills, are now equipped with a nuanced understanding crucial for success in the competitive exam.

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The strategic insights gained from this guide lay a robust foundation, allowing candidates to approach age-based problems with precision and efficiency. By embracing this resource, aspirants fortify their numerical prowess and enhance their readiness to tackle the WBP Constable Exam, demonstrating not only competence in ratios but also a comprehensive grasp of mathematical concepts essential for success in this competitive examination.

So, this is all for today. In our next blog, we will discuss the problems on **Partnership** for **WBP Constable Exam**. Till then, stay tuned!

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