

Arithmetic Reasoning for Competitive Exams

What is Arithmetic Reasoning?

When you are acquainted with the concepts of arithmetic reasoning, you will be able to easily solve any question. The AR questions do not involve complex calculations rather the questions tend to play with your mind with the tricky concept and language. You can practice the questions easily by using simple mathematical operations, arithmetic operations etc.

Arithmetic Reasoning Topics

Listed below are the main topics under Arithmetic Reasoning-

- Algebra
- Ratio and Proportion
- Percentage
- HCF and LCM
- Ages
- Games and Tournaments
- Sequence and Patterns

Solved Examples for AR

Now that you are familiar with the basics of Arithmetic Reasoning, let us go through some solved examples to understand the concept in a better way.

Example 1: Riya is 2 times older than Priya. 3 years ago, the sum of their current ages will be 66. What are their present ages?

Solution:

Let us begin by assuming their ages

Assume that Riya's age is x

It is given that the Priya is twice as old as Riya, then, Priya's age will be $2x$

After 3 years,

Riya's age = $x + 3$

$$\text{Priya's age} = 2x + 3$$

Their total sum is 66

Hence, the equation becomes,

$$x + 3 + 2x + 3 = 66$$

$$3x + 6 = 66$$

$$3x = 66 - 6$$

$$3x = 60$$

$$x = 60 / 3$$

$$x = 20$$

So, the age current age of Riya is 20 and that of Priya is 40

Example 2: Find the number which when multiplied by $\frac{3}{4}$ th of itself gives out the value 10800.

Solution:

Let us begin by assuming that the number is y

Then $\frac{3}{4}$ th of y would be $(y \times \frac{3}{4})$

As per the question,

$$y \times (y \times \frac{3}{4}) = 10800$$

$$\frac{3}{4} y^2 = 10800$$

$$y^2 = 10800 \times \frac{4}{3}$$

$$y^2 = 14400$$

$$y = 14400$$

$$y = 120$$

Example 3: Rahul is now $\frac{1}{4}$ th times as old as his mother Radha. Four years hence, his mother will be three times as old as her son. The age of his mother Radha (in years) is-

Solution: Let Rahul's mother Radha age be $4x$ years. Then, Rahul's age = x years.

Four years hence, Rahul's age = $(x + 4)$ years and Rahul's mother Radha's age = $(4x + 4)$ years.

$$\text{So, } 4x+4= 3(x+4)$$

$$4x-3x= 12-4;$$

$$x = 8.$$

Rahul's mother Radha's age = $4x= 4 \times 8=32$ years

Example 4: A monkey climbs 30 feet at the beginning of each hour and rests for a while when he slips back 20 feet before he again starts climbing at the beginning of the next hour. If he begins his ascent at 8.00 a.m., at what will he first touch a flag at 120 feet from the ground?

Solution: Let ascent of the monkey in 1 hour = $(30 - 20) = 10$ feet.

So, the monkey ascends 90 feet in 9 hours i.e., 5 p.m.

Clearly, in the next 1 hour i.e., till 6 p.m.

The monkey ascends the remaining 30 feet to touch the flag.

Example 5: Two bus tickets from city A to B and three tickets from city A to C cost Rs. 77 but three tickets from city A to B and two tickets from city A to C cost Rs. 73. What are the fares for cities B and C from A?

Solution:

Let Rs. x be the fare of city B from city A and Rs. y be the fare of city C from city A. Then,

$$2x + 3y = 77 \dots(i)$$

$$3x + 2y = 73 \dots(ii)$$

Multiplying (i) by 3 and (ii) by 2 and subtracting, we get: $5y = 85$ or $y = 17$. Putting $y = 17$ in (i), we get : $x = 13$

Example 6: A girl counted in the following way on the fingers of her left hand: She started by calling the thumb 1, the index finger 2, middle finger 3, ring finger 4, little finger 5 and then reversed direction calling the ring finger 6, middle finger 7 and so on. She counted up to 1994. She ended up counting on which finger?

Solution: While counting the numbers associated to the thumb will be 1,9,17,25,.....

i.e., numbers of the form $(8n + 1)$

$$\text{Since } 1994 = 249 \times 8 + 2$$

So, 1993 shall correspond to the thumb and 1994 to the index finger.

We hope that after these solved examples, you will be able to solve the below-mentioned Arithmetic Reasoning questions.

Arithmetic Reasoning Questions

Let us quickly solve these below mentioned questions-

- Some classmates had planned to purchase the photocopy of an assignment together which caused them rupees 96. When all of them were going to buy it, 4 friends did not show up, hence, everyone had to pay Rs. 4 extra. Determine the number of friends that were present while purchasing the assignment
- A waiter's monthly income consists of salary as well as some tips. For one month his tips were $\frac{3}{4}$ of his salary. Determine his income by tips in terms of the fraction
- A teacher was explaining to the students how to count on the fingers, so she began by calling thumb 1, index finger 2, middle finger 3, ring finger 4 and little finger 5. Then she went on with the reverse order in which she stated ring finger 6, middle finger 7 and so on. She taught the children to count up to 1994. Find out on which finger did she stopped the counting?
- In the SSC CGL exam, Sneha attempted 60 questions in total and secured 130 marks. For every correct answer, she got 4 marks and lost one mark for every incorrect answer. as per the total marks received to determine the number of questions she attempted correctly
- What would be the product of all the numbers that one could possibly dial on a telephone?
- 30 friends decide to play a badminton tournament of single players. Once the player is out he or she is out of the tournament. Calculate the number of matches that has to be played to determine who is the winner of the tournament.
- Rohit attempted an examination in which he got two eyes as many sums wrong as he got right. If he attempted 48 questions in total, how many questions did he solve correctly?
- In a farm full of cows and hens, there are 14 legs more than twice the number of heads. How many cows are there in the farm?