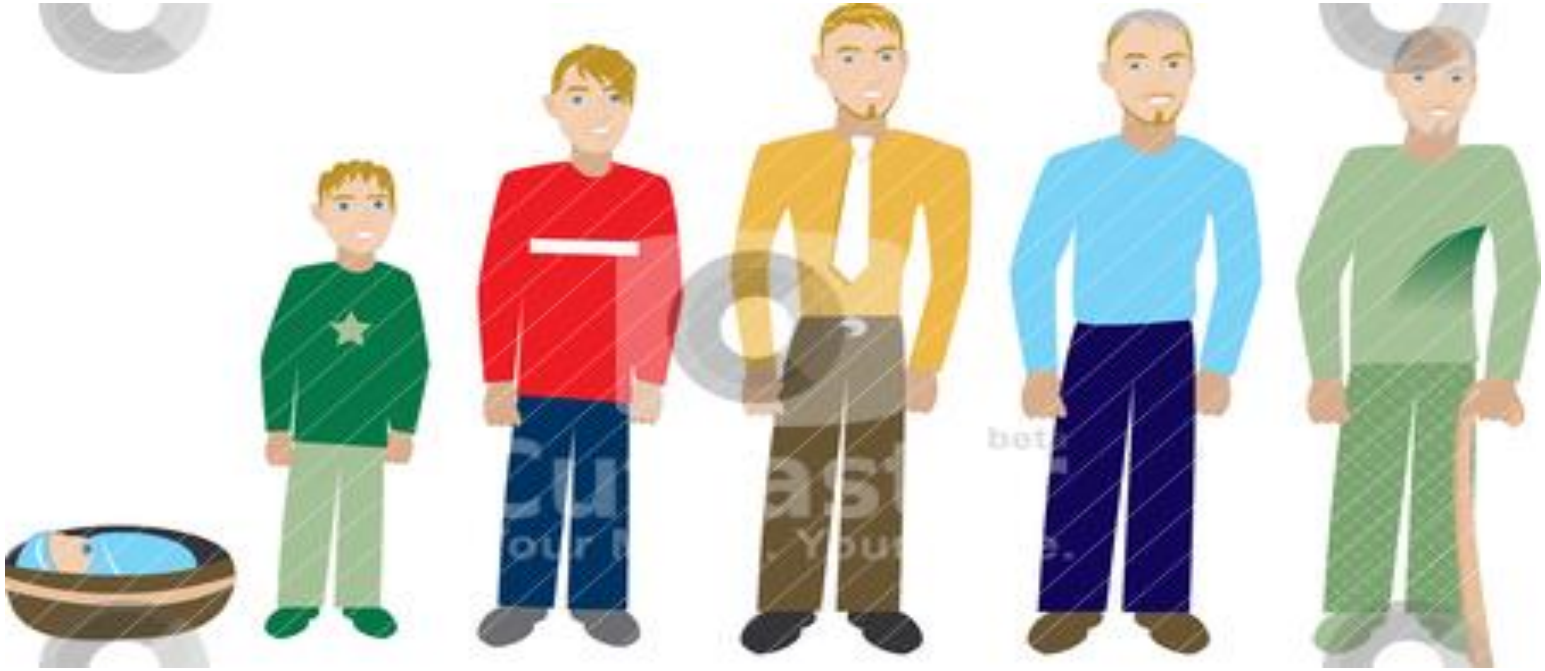
PROBLEMS ON AGES



INTRODUCTION

It is easy to solve all these problems by equations but your objective in exam should be solving these problems in the easiest way which saves more than half the time compared to solving by equation.

The **easiest way** in solving these questions will be by picking the right answer among the four **options** using the **ratio or the values** given in the question.

Forming equations

Statement	Equation
A's age 3 years later (after / hence / down the line)	A+3
A's age 3 years ago	A-3
A is 3 years older than B	A = B + 3
A is 3 years younger than B	A = B - 3
A is 3 times (thrice) as old as B	A = 3B
A is 3 times older than B (or) A is 3 times older to B	A = 3B
Father was as old as his son at present, at the time of his birth.	F - S = S => F = 2S
The present age ratio of A and B is 5:6. Four years hence (or after) their age ratio will be 6:7.	A/B = 5/6 (A+4) / (B+4) = 6:7.

Solving the questions by using GENERAL EQUATION

Example: The sum of the present ages of a son and his father is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, what will be son's age?

S+F = 60
F-6 = 5(S-6)
S+6 = ?

Eq 2 becomes $F-6 = 5S - 30$

$F = 5S - 24$

Substitute this is Eq 1: $S + F = 60$

$S + (5S - 24) = 60$

$6S = 84$

$S = 14$

$S+6 = 20$

∴ The age of the son after 6 years is 20

Solving the question by using TRICKS

Avoid using variables x & y always as there is a chance of going wrong in relating the variables with the persons given. Instead, using the first letter will make the relating easy. For example S can be used as son's age and F can be used as father's age.

Trick 1: Multiple of the ratio

Example: Present ages of Kiran and Shyam are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Shyam's present age in years?

A. 24
B. 22
C. 26
D. 28

Now: The age of **Kiran and Shyam** is in the ratio **5:4**.

∴ **Shyam**'s age should be in the **multiple of 4**.

Only option a and d are having the age of Shyam in the multiple of 4. The answer should be either **a)24 or d)28.**

After 3 years:

Kiran's age – **a)24+3=27** or **d)28+3=31**

The age of **Kiran and Shyam** will be in the ratio **11:9**.

∴ **Shyam**'s age should be in the **multiple of 9**.

Only **a)27** is in the **multiple of 9**.

∴ Shyam's present age is **a)24**.

Example 1. One year ago, the ratio of Sooraj's and Vimal's age was 6: 7 respectively. Four years hence, this ratio would become 7: 8. How old is Vimal?

A. 44Years
B. 43 years
C. 49 Years
D. 36 Years

Trick 2: Ratio difference

Example: Alan is younger than Turing by 6 years and their ages are in the respective ratio of 7 : 9, how old is Turing?

A. 18
B. 27
C. 35
D. 36

The **age** of Alan and Turing is in the **ratio 7:9**.
The **age difference** between them is **6**.

Equate the ratio difference and age difference

7:9

2 parts

6

2 parts = 6

1 part = 3
9 parts = 27

∴ The age of Turing is 27

Example 2. The ratio between the present ages of P and Q is 6:7. If Q is 4 years old than P, what will be the ratio of the ages of P and Q after 4 years.

A)7:9

B)3:8

C)7:8

D)5:8

Trick 3: Divisible values

Example: A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. What is the present age of the mother?

A. 62
B. 45
C. 40
D. 56

***Now:* P= 2/5 M**

This indicates that **M** should be **divisible by 5**.
Only options b) **45** and c) **40** are divisible by 5.

After 8 years:

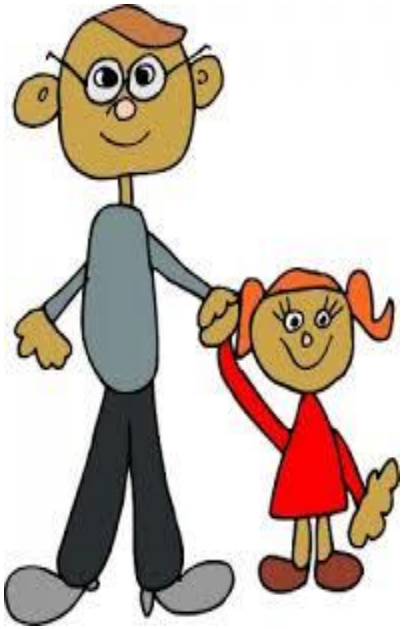
M+8= **b) 45+8 = 53** or **c)40+8 = 48**

P+8 = ½(M+8)
This indicates that **M+8** should be **divisible by 2**.

Only option **c)48** is divisible by 2.
∴ Mother's age is **c) 40**

Example 3. Sandeep's age after six years will be three-seventh of his father's age. Ten years ago the ratio of their ages was 1 : 5. What is Sandeep's father's age at present?

A. 43 Years
B. 60Years
C. 50 Years
D. 56 Years



Example 4. The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. What is the ratio of their present ages?

A. 6:9
B. 7:3
C. 13:4
D. 7:5

Option B

Example: Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between the ages of her parents?

A. 6 Years
B. 5 Years
C. 7 Years
D. 6.5 Years

Ayesha's Father was **38 years old** when she was **born**

F A

38 0

Her Mother was **36 years old** when her Brother was **born**.

M B

36 0

Her Brother is **four years younger** to her

B A

0 4

As these three equations are not in the same timeline, compare the values and make it same.

Eq 2 & Eq 3: The common value **B** is already **same**.

Eq 1 & Eq 3: A=0 & A=4. To make it equal **add 4** with eq1.

F A

42 4

∴ F A M B

42 4 36 0

The difference between F and M is 6.

Example 5. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, what was the son's age five years back?

A. 19 Years
B. 14 Years
C. 16 Years
D. 18 Years

Practice Problems

Q1. The total age of A and B is 12 years more than the total age of B and C. C is how many year younger than A?

A. 12
B. 13
C. 14
D. 15

Q2.The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?

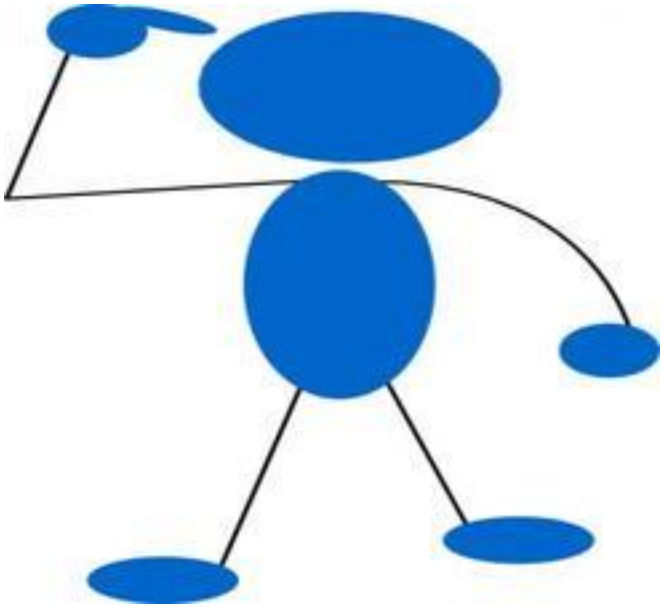
A. 2
B. 4
C. 6
D. 10

Q3.Ages of two person differ by 16 years. If 6 year ago, the elder one be 3 times as old the younger one, find their present age.

A. 36, 16
B. 30, 14
C. 24, 8
D. 30, 10

Q4. Steve is older than Mark by 6 years. If the ratio of their current ages is 7:9, what will be the corresponding new ratio of their ages when Mark is twice as old as he is now?

A. 7:8
B. 4:7
C. 3:9
D. 1:4



Q5. Sneh's age is 1/6th of her father age. Sneh's father age will be twice of Vimal age after 10 years. If Vimal's 8th birthday was celebrated 2 years ago. Then what is the present age of Sneh?

A. 5

B. 4

C. 6

D. 10

- V Present age =10
- After 10 year V=20 Sneh Father=40
- So Sneh Father present age = 30
- So sneh Present age = 1/6 30 = 5 Ans

Q6. The age of the father 3 years ago was 7 times the age of his son. At present, the father's age is five times that of his son. What are the present ages of the father and the son?

A. 45, 9

B. 40, 10

C. 50, 7

D. 48, 5

Problems On Numbers

Some Basic Formulae

$(a + b)(a - b) = (a^2 - b^2)$

$(a + b)^2 = (a^2 + b^2 + 2ab)$

$(a - b)^2 = (a^2 + b^2 - 2ab)$

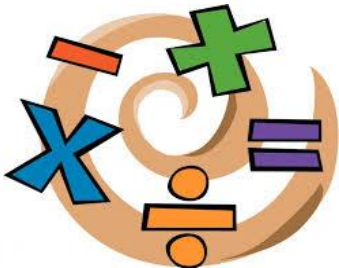
$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

$(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$

$(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$

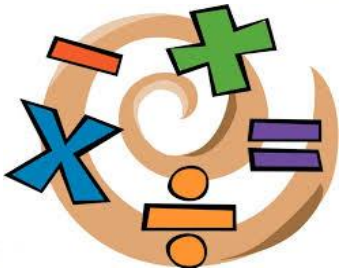
$(a^3 + b^3 + c^3 - 3abc) = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ac)$

When $a + b + c = 0$, then $a^3 + b^3 + c^3 = 3abc$.



A **two digit number** can be represented as **10x+y** where x and y are the two digits.

Similarly a **three digit number** as **100x+10y+z** and so on.



Q1. If one-third of one-fourth of a number is 15, then three-tenth of that number is:

A.54
B.45
C.36
D.58

Option A

- 1/3 (¼ of x)=15
- X=180 so
- 3/10 of 180 =54Ans

Q2. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

A.8
B.16
C.4
D.12

- Numbers can be 12 and 21
- 24 and 42
- 36 and 63
- 48 and 84 and 84-48 is also 36 as given
- So the answer is (8+4) – (8-4)=12-4=8

Q. A two-digit number is such that the product of the digits is 8. When 18 is added to the number, then the digits are reversed. The number is:

A.24
B.12
C.48
D.26

Q. In a two-digit, if it is known that its unit's digit exceeds its ten's digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is:

A.24
B.26
C.28
D.30
E. 32

96 is divided into two parts in such a way that seventh part of first and ninth part of second are equal. Find the smallest part ?

A) 42

B) 54

C) 46

D) 58

Q. A fraction becomes 2/3 when 1 is added to both, its numerator and denominator .And , it becomes 1/2 when 1 is subtracted from both the numerator and denominator. What is the fraction?

A) 4/3

B) 5/4

C) 3/2

D) 3/5