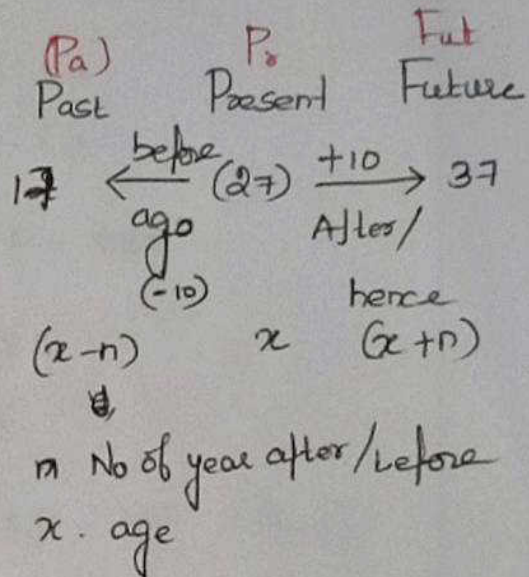




Problems on Age

Introduction

Q₁ The Present ages of A & B are in the ratio 4:5 and after 5 yrs they will be in the ratio 5:6. The Present age of A is



Pa P₀ Fut

$$4:5 \xrightarrow[5\text{yrs}]{} 5:6$$

$$a:b = \frac{a}{b}$$

$$4x+5 : 5x+5 = 5:6$$

$$\frac{4x+5}{5x+5} = \frac{5}{6}$$

$$24x+30 = 25x+25$$

$$\boxed{x = 5}$$

The Present Age of A is $4 \times 5 = 20$ yrs

B. $5 \times 5 = 25$ yrs

Q₂ The respective Ratio of the Present ages of Swati and Toupu is 4:5. Six years hence. the respective ratio of their ages will be 6:7. What is the difference between their ages?

$$P_a \quad P_o \quad F_u$$

$$4:5 \xrightarrow{6 \text{ yrs}} 6:7$$

$$4x + 6 : 5x + 6 = 6 : 7$$

$$\frac{4x + 6}{5x + 6} = \frac{6}{7}$$

$$28x + 42 = 30x + 36$$

$$2x = 6$$

$$x = \frac{6}{2} = 3$$

$$\text{Scott's Age} = 4 \times 3 = 12 \text{ yrs}$$

$$\text{Tom's Age} = 5 \times 3 = 15 \text{ yrs}$$

The difference between their ages = $15 - 12 = 3$ years

Q₃ The ratio of Present ages of two brothers is 1:2 and 5yo back, the ratio was 1:3. What will be the ratio of their ages after 5yo?

$$\text{Past} \quad \text{Pre} \quad \text{Fut}$$

$$1:3 \xleftarrow{5 \text{ yrs}} 1:2 \xrightarrow{5 \text{ yrs}} \frac{?}{3} : \frac{?}{5}$$

$$x : 2x$$

$$\frac{x - 5}{2x - 5} = \frac{1}{3}$$

$$3x - 15 = 2x - 5$$

$$x = 10$$

$$1^{\text{st}} \text{ Bro Present Age} = 10$$

$$2^{\text{nd}} \text{ Bro Present Age} = 20$$

After 5yo

$$1^{\text{st}} \text{ Brother} = 15$$

$$2^{\text{nd}} \text{ Brother} = 25$$

$$\frac{15}{3} : \frac{25}{5}$$

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Q4 The ratio of the Present ages of Anju and Sandhya is $13:17$, respectively. 4 years ago, the respective ratio of their ages was $11:15$ what will be the respectively ratio of their ages six years hence?

$$\begin{array}{ccc}
 P_a & P_o & \xrightarrow{6 \text{ years}} F_u \\
 \text{ago Anju: Sandhya} & & \\
 11:15 & \xleftarrow{-4} & 13:17
 \end{array}$$

$$13x : 17x$$

$$\frac{13x - 4}{17x - 4} = \frac{11}{15}$$

$$195x - 60 = 187x - 44$$

$$8x = 16$$

$$x = 2$$

$$\text{Anju age} = 26. (13 \times 2) \text{ yrs}$$

$$\text{Sandhya} = (17 \times 2) 34 \text{ yrs}$$

After 6 years, their ratio of Age. $32:40 =$

$$4:5$$

Q5 4 yrs ago, the ratio of the ages of A and B was $2:3$ and after 4 yrs, it will become $5:7$. Find their present ages

$$\begin{array}{ccc}
 P_a & \xrightarrow{4 \text{ years}} & P_o & \xrightarrow{4 \text{ yrs}} & F_u \\
 2:3 & & \text{---} & & 5:7 \\
 & & 2x+4 & 3x+4 & \\
 & & \xrightarrow{8 \text{ years}} & &
 \end{array}$$

$$\frac{2x+8}{3x+8} = \frac{5}{7}$$

$$14x + 56 = 15x + 40$$

$$x = 16$$

The Present Age =

$$1^{\text{st}} \text{ person} = 2x + 4 = 32 + 4 = 36$$

$$2^{\text{nd}} \text{ person} = 3x + 4 = 52$$

Future Age after 6 years - 36, 52

Q. Haasha is 40 yrs old and Rith is 60 yrs old. How many years ago was the ratio of their ages

3:5

Past Present
 ↖
 3:5 40:60

$$\frac{40-x}{60-x} = \frac{3}{5}$$

$$200 - 5x = 180 - 3x$$

$$2x = 20$$

$$x = 10$$

The 10 ten years ago



Q7 The ratio of the ages of 2 persons is 4:7 & age of one of them is greater than that of the other by 30yrs. The sum of their ages (in years) is

$$A : B$$

$$4 : 7$$

$$4x \sim 7x = 30 \text{ yrs}$$

$$3x = 30 \text{ yrs}$$

$$x = 10 \text{ yrs}$$

$$A = 40 \text{ yrs} \quad \& \quad B = 70 \text{ yrs}$$

The sum of their ages is $\frac{1}{2} 40 \text{ yrs} + 70 \text{ yrs}$
110 yrs

Q8 The respective ratio between the present ages of Parag and Sapna is 21:19. Six years ago, the respective ratio between their ages was 9:8. How old is Lina, if her present age is 12 yrs less than Sapna's present age?

Past \leftarrow 6 yrs \leftarrow Present
 Parag & Sapna
 9:8 \leftarrow 21:19
 \leftarrow 6 \leftarrow 21x:19x

$$\frac{21x - 6}{19x - 6} = \frac{9}{8}$$

$$168x - 48 = 17x - 54$$

$$3x = 6$$

$$x = 2$$



Pooja 42 years
Sapna 38 years

Lina ages

Sapna 38 years - present

Lina - $38 - 12 = 26$ years

∴ Lina Present age is 26 years

Twice / Thrice the ages

Son = x

Father's age = $3x$



Father's age is three times the age of his son

Father is aged three times more than his son

Son = x

Q1 I am 3 times as old as my father = $x + 3x$
Son 15 yrs hence, I will be twice as = $4x$
old as my son The sum of our ages is

Son = x
Age of father = $3x$

After 15 years

Father = $3x + 15$

Son = $x + 15$

$$3x + 15 = 2(x + 15) = 2x + 30$$

$$x = 15$$

Son = 15
father = 45

Sum = $45 + 15$
= 60 years



Q2 The sum of present ages of A and B is 11 times the difference of their ages. 5 years hence, their total ages will be 13 times the difference of their ages. What is the present age of elder one?

Present

$$A + B = 11(A - B)$$

$$A + B = 11A - 11B$$

$$11A - A = B + 11B$$

$$10A = 12B$$

$$5A = 6B$$

$$\frac{A}{B} = \frac{6}{5}$$

$$A : B = 6 : 5$$

5 years hence, $6x + 5$: $5x + 5$
at younger

$$6x + 5 + 5x + 5 = 13(6x - 5x)$$

$$11x + 10 = 13x$$

$$2x = 10$$

$$x = 5$$

$$A = 6x = 6 \times 5 = 30 \text{ years}$$

\therefore elder age = 30 years



Q3 The present age of a father is 3 years more than ~~three~~ times the age of his son. 3yr hence, father's age will be 10yr more than twice the age of the son. The father's present age is

$$\text{Present Age Son} = x$$

$$\text{Father} = 3 + 3x$$

By, Hence (future)

$$\text{son} = x + 3$$

$$\text{father} = 3x + 6$$

$$3x + 6 = 10 + 2(x + 3)$$

$$3x + 6 = 10 + 2x + 6$$

$$3x + 6 = 2x + 16$$

$$x = 10$$

$$\text{Father Present Age} = 3 + 30 = 33 \text{ years}$$

Q4 10 years ago daughter's age was $\frac{2}{5}$ (two-fifths) of her mother's age that time. While 10 years hence her age will be three-fifths of her mother's age. Find the difference in the ages of the two.

$$\text{Daughter} = x \quad (x - 10)$$

$$\text{Mother} = y \quad (y - 10)$$

$$x - 10 = \frac{2}{5} (y - 10) \rightarrow \textcircled{1}$$

Q6 If the ages of A and C are added to twice the age of B, the total becomes 59. If the ages of B and C are added to thrice the age of A, the total becomes 65 and if the age of A is added to thrice the age of B and thrice the age of C, the total becomes 106. What is the age of A?

$$A + C + 2B = 59 \rightarrow (1)$$

$$B + C + 3A = 65 \rightarrow (2)$$

$$A + 3B + 3C = 106 \rightarrow (3)$$

Eqn (2) $\times 3$

$$3B + 3C + 9A = 65 \times 3 = 204 \rightarrow (4)$$

Sub eqn (4) \ominus (3)

~~3B~~

$$~~3B + 3C + 9A = 204~~$$

$$3B + 3C + 9A = 204$$

$$(-) \quad 3B + 3C + A = 106$$

$$8A = 98$$

$$A = 12$$

The Age of A is 12 years



Meena Married 10 years ago. Today her age is $\frac{7}{5}$ times her age at the time of her marriage. Her daughter age is $\frac{1}{5}$ of her age. What is the ratio of Meena's age to her daughter age after 5 years.

$$\begin{array}{l} \text{Meena Age} = x \\ \text{10 years ago} \end{array}$$

$$\text{Meena Marriage} = x - 10$$

Present / Today age

$$x = \frac{7}{5}(x - 10)$$

$$5x = 7x - 70$$

$$2x = 70$$

$$x = 35 \text{ years}$$

Age of Meena is 35 years

$$\begin{aligned} \text{Daughter Age} &= \frac{1}{5} \times 35 \\ &= 7 \text{ years} \end{aligned}$$

After 5 year

$$\text{Ratio} : \frac{(35+5)}{7+5} = 40 : 12$$

$$10 : 3$$

$$(x+10) = \frac{3}{5}(y+10) \rightarrow (2)$$

$$5x - 50 = 2y - 20$$

$$5x - 2y = 30 \rightarrow (3)$$

$$5x + 50 = 3y + 30$$

$$5x - 3y = -20 \rightarrow (4)$$

$$(3) - (4)$$

$$\begin{array}{r} 5x - 2y = 30 \\ (-) \quad 5x - 3y = -20 \\ \hline \end{array}$$

$$y = 50$$

Mother's age : 50

Sub $y = 50$ in Eqn (3)

$$5x - 100 = 30$$

$$5x = 130$$

$$x = 26$$

Age of daughter : 26

$$\text{The difference of the age} = 50 - 26 = 24$$

Father is aged three times more than his son Arun. After 5 years, he would be two and a half times of Arun's age. After further 5 years, how many times would he be of Arun's age?

Present age

$$\text{Son Age} = x$$

$$\text{Father Age} = x + 3x = 4x$$

After 8 years,

$$x+8 \therefore 4x+8$$

$$4x+8 = 2\frac{1}{2}(x+8)$$

 $2\frac{1}{2}$

$$4x+8 = \frac{5}{2}(x+8)$$

$$8x+16 = 5x+40$$

$$3x = 40 - 16$$

$$3x = 24$$

$$x = 8$$

Son age = 8 years

Father age = 32 years

Then 8 years

$$8+8+8 = 16+8 = 24$$

-After 16 years Son = 24 yrs

$$\text{Father} = 32+16 = 48 \text{ yrs}$$

Two times would he be of -Arjun's age

Q8 The sum of the ages of father and son is 45 yrs. Five years ago the product of their ages was 4 times the father's age at that time the present ages of father & son are

$$\text{Son age} = x$$

$$\text{Father age} = y$$

$$x + y = 45 \rightarrow \textcircled{1}$$

5 years ago,

$$(x-5) + (y-5) = 45$$

$$x + y = 55 \quad (35)$$

$$x \times y = 45$$

$$\text{Past age } x = 4 \quad y = 51 \quad (31)$$

Present Age

$$\text{son} = 9 \text{ yrs}$$

$$\text{father} = 36 \text{ yrs}$$