M T W T F S

Test-04

DATE:

Qno:-2

(A)

Solution

Let suppose two numbers to be = x

ratio will be ⇒ $\frac{3x}{5x}$ → (1)

Subtract 9 from eq (1)

$= \frac{3x-9}{5x-9}$

new ratio = $\frac{12}{23}$ so,

$\frac{3x-9}{5x-9} = \frac{12}{23}$ → (2)

solve equation

$23(3x-9) = 12(5x-9)$

$69x - 207 = 60x - 108$

$69x - 60x = +207 - 108$

$9x = 99$

$x = \frac{99}{9}$ 11

$\boxed{x = 11}$

It is smaller number.

$= 3x = 3(11) = 33$

(1) 12 × 9 = 108

23 × 3 = 69

(2) 23 × 9 = 207

(1) 12 × 5 = 60

207 − 108 = 99

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(B)

Solution

Let three partners to be A, B, C respectively.

their shared profit = 5 : 7 : 8 respectively

Months = 14 : 8 : 7 respectively

Real ratio of investment = ?

Let ratio of A to B = $\frac{5}{7}$

Let ratio of B to C = $\frac{7}{8}$

ratio of A to C = $\frac{5}{8}$

after multiplying with respective months equations become

$$\frac{5}{7} \times 14 = \frac{7}{8} \times 8 = \frac{5}{8} \times 7 \rightarrow eq(1)$$

solving eq(1)

$$\frac{5}{7_1} \times 14^2 = \frac{7}{8} \times 8 = \frac{5}{8} \times 7$$

$$10 = 7 = \frac{35}{8} \rightarrow eq(2)$$

divide and multiply '8' by eq(2)

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80 : 56 : 35.

So it is the ratio of their investment.

(C)

(Solution)

Average weight of A, B, C = 45kg

Average weight of A, B = 40kg

Average weight of B, C = 43kg

Weight of B = ?

Average weight of A, B, C = 45kg

so:- $\frac{A+B+C}{3} = 45 \rightarrow (1)$

Average weight of A, B = 40kg

so, $\frac{A+B}{2} = 40 \rightarrow (2)$

Average weight of B, C = 43kg

so, $\frac{B+C}{2} = 43 \rightarrow (3)$

(1) 45
x3
135

solve eq (1):- $\frac{A+B+C}{3} = 45$

$A+B+C = 135$

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solve eq (2) $\frac{A+B}{2} = 40$

$A+B = 80$

$\boxed{B = 80-A} \rightarrow (5)$

solve eq (3) $\frac{B+C}{2} = 43$

$B+C = 86$

$\boxed{C = 86-B} \rightarrow (6)$

Put eq (5) and (6) in eq (4)

It becomes:-

$A+B+C = 135$

$A + 80-A + 86-B = 135$

$80 + 86 - B = 135$

$-B = -166 + 135$

$-B = -31$

$\boxed{B = 31}$.

80
+86
166.
135
31

So weight of B = 31 kg.

(D)

(Solution)

Find no positive = ?

Let number = x

increaded by 17 so = $x+17$ → (1)

is equal to 60 times reciprocal

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of number =

reciprocal of number = $\frac{1}{x}$

60 times = $\frac{1}{x} \times 60$ ... (2)

So equalizing eq (1) and (2) =

$x + 17 = \frac{1}{x} \times 60$

$x + 17 = \frac{60}{x}$

$x(x+17) = 60$

$x^2 + 17x - 60$ → (3)

Factorizing equation (3)

$x^2 + 17x - 60 = 0$

$x^2 + 20x - 3x - 60 = 0$

60
20 3

$x(x+20) - 3(x+20) = 0$

$(x-3)(x+20) = 0$

$x - 3 = 0$ | $x + 20 = 0$

$\boxed{x = 3}$ | $\boxed{x = -20}$

Positive number is ⇒ 3

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Q.no:03

A

Solution:-

Percentage profit earned by selling an article for Rs. 1920.

Loss percentage of same article Selling Price = Rs 1280.

What price should be sold to earn profit 25% = ?

As,

$$\text{Profit \%} = \frac{\text{Profit}}{\text{C.P}} \times 100 \rightarrow (1) \quad \therefore \text{Profit} = \text{S.P} - \text{C.P}$$

and

$$\text{Loss \%} = \frac{\text{Loss}}{\text{C.P}} \times 100 \rightarrow (2) \quad \therefore \text{Loss} = \text{C.P} - \text{S.P}$$

So, by equalizing eq(1) and (2) we get-

$$\frac{\text{Profit}}{\text{C.P}} \times 100 = \frac{\text{Loss}}{\text{C.P}} \times 100$$

adding profit, Loss formulae-

$$\left(\frac{\text{S.P} - \text{C.P}}{\text{C.P}} \times 100\right) = \left(\frac{\text{C.P} - \text{S.P}}{\text{C.P}} \times 100\right)$$

putting values of S.P of Loss and profit

$$\left(\frac{1920 - \text{C.P}}{\text{C.P}} \times 100\right) = \left(\frac{\text{C.P} + 1280}{\text{C.P}} \times 100\right)$$

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$$\frac{1920 - C.P}{C.P} \times 100 = \frac{C.P - 1280}{C.P} \times 100$$

$$1920 - C.P = C.P - 1280$$

$$-C.P - C.P = -1280 - 1920$$

$$+2C.P = +3200$$

$$C.P = \frac{3200}{2} = 1600$$

$$\boxed{C.P = 1600}$$

Now, S.P for 25% profit as-

$$\text{Profit \%} = \frac{S.P - C.P}{C.P} \times 100$$

$$25 = \frac{S.P - 1600}{1600} \times 100$$

$$25 \times 16 = S.P - 1600$$

$$S.P = 400 + 1600$$

$$\boxed{S.P = 2000}$$

Selling Price should be Rs. 2000 in order to get 25%.

1920
1280
3200

25 x 16
150
25x
400

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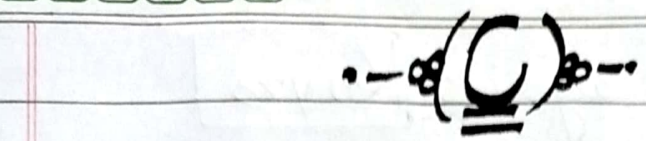

Solution

Mother at present = ?

A person's present age = $\frac{2}{5}$ mother age → ①

Let person = y & mother = x,

After 8 years = $\frac{1}{2}$ mother age → ②

So, equalizing eq ① & ②

$$\frac{2}{5}y = \frac{1}{2}(y+8)$$

$$\frac{2}{5}y = \left(\frac{1}{2}(y)+8\right)\frac{2}{5}$$

$$\frac{2}{5}y = \frac{2y}{10} + \frac{16}{5}$$

$$\frac{2y}{5} - \frac{2y}{10} = \frac{16}{5}$$

$$\frac{20y-10y}{50} = \frac{16}{5}$$

$$\frac{10y}{50} = \frac{16}{5}$$

$$\boxed{y = 16}$$

So putting in eq ①

$$y = \frac{2}{5}x$$

$$16 = \frac{2}{5}x$$

$$x = \frac{80}{2} \Rightarrow \boxed{40}$$

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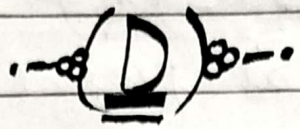
Mother's age is 40 yrs



Solution

let number = x

A student multiplied it by $\frac{3}{5} = \frac{3x}{5}$

Actual multiply was by $\frac{5}{3} = \frac{5x}{3}$

Percentage error in correction = ?

Error/difference $= \frac{5x}{3} - \frac{3x}{5}$

$= \frac{-9x+25x}{15}$

$= \frac{16x}{15}$

% error $= \frac{16x}{15} \times \frac{100}{x}$ 20

$= \frac{320x}{3}$

16 × 20 = 320

% error $= \frac{\text{error}}{\text{actual}} \times 100$ so

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$$\% \text{ error} = \frac{\frac{16}{15}}{\frac{5}{3}} \times 100$$

$$= \frac{16}{15} \div \frac{5}{3} \times 100$$

$$= \frac{16}{\cancel{15}_{5}} \times \frac{\cancel{3}}{5} \times 100$$

$$= \frac{\cancel{1600}^{320}}{\cancel{25}_{5}} 64$$

$$\boxed{\% \text{ error} = 64.0}$$

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