When 40% of a number is added to 42, the resultant no, is itself find the number.

Solution

let the number $= x$.

$$40\% = \frac{40}{100}$$

$$\frac{40}{100}(x) + 42 = x.$$

$$\frac{40}{100}(x - x) = -42.$$

$$x\left(\frac{40}{100} - 1\right) = -42.$$

$$\cancel{-}\, x\left(1 - \frac{40}{100}\right) = \cancel{-}\, 42.$$

$$x\left(\frac{1 \times 100}{1 \times 100} - \frac{40}{100}\right) = 42.$$

$$x\left(\frac{100 - 40}{100}\right) = 42.$$

$$x\left(\frac{3\cancel{60}}{5\cancel{100}}\right) = 42.$$

$$x\left(\frac{3}{5}\right) = 42.$$

$$x = 42 \times \frac{5}{3} = \frac{\cancel{210}}{\cancel{3}\,1}\overset{70}{}$$

$$\boxed{x = 10.}$$ ✓

Question 2:

A metal bar weighs 8.15 ounces: 93% of the bar is silver, how many of silver are in bar?

weight of metal bar = 8.15

93% × 8.15 = silver.

$$\frac{93}{100} \times \frac{815}{100} = \text{silver.}$$

0.93 × 8.15

$$\boxed{7.57} \text{ Ans.}$$

—7

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$$\begin{array}{r} \overset{1}{8}.\overset{4}{15} \\ \times \ 0.93 \\ \hline 24\ 45 \\ 733\ 5\times \\ 000\ \times\times \\ \hline 7.5\ 79\ 5 \end{array}$$

Question 3:—

15 liter of mixture contains 20% alcohol and the rest is water. If 3 liters of water be mixed in it, what is percentage of alcohol in new mixture?

Solution:—

Total mixture = 15 liters

Alcohol : 20%

Water   : 80% ✓

$$\frac{20}{100} \times 15 = 3 \text{ liter Alcohol}$$

$$\therefore \quad 15 - 3 = 12 \text{ liter water}$$

if 3 liter of water be mixed in it

water + mixture = 3 + 12
15 liter water.

15 liter + 3 liter = 18 liter
water   alcohol   mixture

Percentage of alcohol in new mixture

alcohol → $\frac{3}{18}$ ← percentage

total mixture ← 18

$$\frac{3}{18} \times 100 = 16.66$$

$$0.16 \times 100 = \boxed{16.66 \ \%}$$

Question 4:

A student earned a grade of 80% in maths that had 20 problems. How many problems in that test did the student answer correctly.

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$$80\% \times 2 \cdot 0 = x$$

$$\frac{20}{\cancel{100}^{5}} \times \cancel{100} = x$$

$$\frac{\cancel{20}^{16}}{\cancel{5}_{1}} = x$$

$$\boxed{x = 16.}$$

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Question 5: 1 kg of tea and 4 kg of sugar cost Rs 35, but of sugar rises by 50% and tea 10% they would cost Rs 42.50. Find the price per kg of sugar.

Solution

1 kg of tea + 1 kg of Sugar = 35.

1 kg sugar rises = 50%.

1 kg tea rises = 10%.

Let, the tea = T

the Sugar = S

as given :-

$$1T + 4S = 35 \longrightarrow Ⓐ$$

$$80\% \times 20 = x$$

$$\frac{\overset{20}{\cancel{80}}}{\cancel{100}_5} \times \cancel{20}^{1} = x$$

$$\frac{\overset{16}{\cancel{80}}}{\cancel{5}_1} = x$$

$$\boxed{x = 16.}$$

Question 5: 1 kg of tea and 4 kg of sugar cost Rs 35, but of sugar rises by 50% and tea 10% they would cost Rs 42.50. Find the price per kg of sugar.

Solution

1 kg of tea + 4 kg of sugar = 35.

1 kg sugar rises = 50%.

1 kg tea rises = 10%.

let, the tea = T
      the sugar = S

as given :-

$$1T + 4S = 35 \longrightarrow Ⓐ$$

new sugar raise by 50%.
and tea raise by 10%.

so

$$T = T + 10\% T$$
$$4S = 4S + (50\%)4S$$

so resulting eq is:

$$(t + 10\% T) + [4S + (50\%)(4S)] = 42.5$$

$$\left(t + \frac{\cancel{10}}{\cancel{100}} t\right) + \left(4S + \frac{\cancel{80}^{2}}{\cancel{100}_{1}} \times \cancel{4}S\right) = 42.5$$

$$\left(t + \frac{1}{10} t\right) + (4S + 2S) = 42.5$$

Taking LCM:

$$\left(\frac{10t + 1t}{10}\right) + (4S + 2S) = 42.5$$

$$\frac{11t}{10} + 6S = 42.5$$

multiplying 10 on both sides.

$$10\left[\frac{11t}{10} + 6S\right] = (42.5)(10)$$

$$\cancel{10}\left(\frac{11t}{\cancel{10}}\right) + 10 \times 6S = 425.0$$

$$\boxed{11t + 60S = 425} \quad \text{①}$$

$$\begin{array}{r} 42 \\ \times \\ \hline 0 \\ 42 \\ \hline 42 \end{array}$$

now we need to find value of
Ryan = S = ?

$$t + 4s = 35.$$
$$4s = 35 - t.$$
$$t = 35 - 4s.$$

Putting value of T in equation ⑧.

$$11(35 - 4s) + 60(s) = 425$$
$$385 - 44s + 60s = 425$$
$$425 - 385 = 60s - 44s.$$
$$40 = 16s.$$
$$\frac{2 \cdot 5}{\cancel{40}} = s.$$
$$\cancel{16}_1$$

$$2 \cdot 5 = S.$$

4

$$\begin{array}{r} 35 \\ \underline{\times 11} \\ 35 \\ 35 \times \\ \underline{} \\ 385 \end{array}$$

$$\begin{array}{r} 425 \\ -385 \\ \hline 40 \end{array}$$

$$\begin{array}{r} 60 \\ -44 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 16 \\ \times 2 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 16 \\ \times 3 \\ \hline 48 \end{array}$$

$$\begin{array}{r} 16 \\ \times 5 \\ \hline 0 \end{array}$$