

(EXAMPLES)

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Example 1

In a parking there are 800 cars in which 80% cars are Pakistani made. Find the number of Pakistani cars.

Solution: do all the steps and explain those steps by giving statements.

Total number of cars = 800

Number of Pakistani cars = $\frac{80}{100} (800)$

= 640 cars

write the final answer in the form of statement.

Example 2

In an aeroplane 400 passengers are board, in which 52% are Pakistani, 17% Chinese, 12% Iranies and rest of passengers are British.

1. Find the passengers of each country.

2. What is the percentage of British people?

Solution:

Total number of passengers = 400

1) Pakistani passengers = $\frac{52}{100} (400)$

= 208 passengers

Chinese passengers = $\frac{17}{100} (400) = 68$

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$$\begin{aligned} \text{Iranian Passengers} &= \frac{12 (400)}{100} \\ &= 48 \text{ passengers} \end{aligned}$$

$$\begin{aligned} \text{British passengers} &= 400 - (208 + 68 + 48) \\ &= 400 - 324 = 76 \end{aligned}$$

$$\begin{aligned} \text{2) Percentage of British passengers} &= \frac{76}{400} \times 100 \\ &= 19\% \end{aligned}$$

Example 3

If $\frac{1}{8}$ is decreased by 25%, we get?

Solution:

25% of $\frac{1}{8}$ which is to subtracted from $\frac{1}{8}$

$$\begin{aligned} &= \frac{25}{100} \left(\frac{1}{8} \right) \\ &= \frac{1}{32} \end{aligned}$$

Now

$$= \frac{1}{8} - \frac{1}{32}$$

$$= \frac{4-1}{32} = \frac{3}{32} = 0.09375$$

Example 4

When 60 is subtracted from 60% of a number, the resulting number is 60, what is the

number?

Solution: Let the number be x
 60% of the number = $\frac{360}{100}(x) = \frac{3x}{5}$

According to the given statement

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

$$\frac{3x}{5} = 60 + 60$$

$$\frac{3x}{5} = 120$$

$$3x = 120 \times 5$$

$$3x = 600 \Rightarrow x = 200$$

So the number is ~~200~~.

Example 5

A candidate who gets 30% of total votes polled, is defeated by 15000 votes. Find the number of votes of the winning candidate.

Solution: Let the total number of votes polled be x .

$$\begin{aligned} \text{Defeated candidate's votes} &= \frac{30}{100}(x) \\ &= \frac{3}{10}x \end{aligned}$$

$$\begin{aligned} \text{Winning candidate's votes} &= x - \frac{3x}{10} \\ &= \frac{10x - 3x}{10} = \frac{7x}{10} \end{aligned}$$

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Difference of votes between winning and defeated candidates = 15000

Now

$$\frac{7}{10}x - \frac{3}{10}x = 15000$$

$$\frac{7x - 3x}{10} = 15000$$

$$4x = 150000$$

$$x = \frac{150000}{4}$$

$$x = 37500 \text{ votes}$$

Votes of the winning candidate = $\frac{7}{10}(x)$

$$= \frac{7}{10}(37500)$$

$$= 26250 \text{ votes}$$

Example 6

In a college examination, 52% of the candidates failed in mathematics and 42% failed in English. If 17% failed in both the subjects, then the percentage of the candidates who pass in both subjects is?

Solution:

Candidates failed in mathematics = 52%

Candidates failed in English = 42%

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Candidates failed in both subjects = 17%.

Candidates passed in both subjects = ?

Candidates failed in at least

one subject = $(52\% + 42\%) - 17\%$

$= 94\% - 17\%$

$= 77\%$

Candidates passed in both subjects

$= 100\% - 77\%$

$= 23\%$

Example 7

Nadeem spends 30% of his income on food articles, 40% of the remaining on conveyance and clothes and saves 50% of the remaining. If his monthly salary is 18400 Rs, how much money does he save every month?

Solution:

Total income of Nadeem = 18400 Rs

Expenditure on food articles = $\frac{30}{100} (18400)$

$= 5520$ Rs

Remaining amount = $18400 - 5520$

$= 12880$ Rs

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$$\begin{aligned} 40\% \text{ of remaining expenditure on} \\ \text{conveyance and clothes} &= \frac{40}{100} \cdot (12880) \\ &= 5152 \text{ Rs} \end{aligned}$$

$$\begin{aligned} \text{Now Remaining amount} &= 12880 - 5152 \\ &= 7728 \text{ Rs} \end{aligned}$$

$$\begin{aligned} \text{Saves } 50\% \text{ of the remaining} &= \frac{50}{100} (7728) \\ &= \frac{7728}{2} \end{aligned}$$

this is good way of attempting.

$$= 3864 \text{ Rs}$$

Nadeem saves 3864 Rs every month.

Example 8

A man buys 5 kg of meat at Rs 500/kg. In addition, for every kilogram of meat purchased, he has to pay a consumption tax of 6% on the selling price. Calculate the total amount of money that he has to pay.

Solution:

$$\text{Price of 1 kg of meat} = 500 \text{ Rs}$$

$$\text{Price of 5 kg of meat} = 5 \times 500 = 2500$$

As he has to pay 6% tax on price, the amount of money to

$$\begin{aligned}
 \text{be paid} &= 2500 + \frac{6}{100} (2500) \\
 &= 2500 + 150 \\
 &= 2650 \text{ Rs}
 \end{aligned}$$

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More Practice Problems

Question 1: When 40% of a number is added to 42, the result is the number itself. Find the number.

Solution:

Let the number be x

According to the given statement,

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

$$42 + \frac{2}{5}x = x$$

$$x - \frac{2}{5}x = 42$$

$$\frac{5x - 2x}{5} = 42$$

$$3x = 210$$

$$x = 70$$

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Question 2: A metal bar weighs 8.15 ounces. 93% of the bar is silver, how many of the silver are in the bar?

Solution:

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Total weight of metal bar = 8.15 ounces
Silver in the metal bar = $\frac{93}{100} (8.15)$
 $= \frac{757.95}{100}$
 $= 7.57$ ounces

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

Solution:

Number of liters of mixture = 15 liters
As mixture contain 20% alcohol = $\frac{20}{100} (15)$
 $= 3$ liters

Water in the mixture = $15 - 3 = 12$ liters
When 3 liters of water is mixed in the original mixture, the new mixture = $15 + 3 = 18$ liters

%age of alcohol in the new solution = $\frac{\text{alcohol}}{\text{New mixture}} \times 100$
 $= \frac{3}{18} \times 100$
 $= 16\frac{2}{3}\%$

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Question 4: A student earned a grade of 80% in math that had 20 problems. How many problems in that test did the student answer correctly?

Solution:

Total problems in math = 20

Problems that student answered correctly = $\frac{80}{100} (20)$
= 16 problems

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

Solution:

Let the tea and sugar be x and y respectively. Then

$$x + 4y = 35 \rightarrow (1)$$

50% rise in sugar price = $\frac{80}{100} (4y) + 4y$
= $6y$

10% rise in sugar price = $\frac{10}{100} (x) + x$
= $\frac{11}{10} x$

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As given, the rise in sugar and tea price would cost Rs 42.50, so

$$\frac{11x + 6y}{10} = 42.50$$

$$\frac{11x + 60y}{10} = 425$$

$$11x + 60y = 425 \rightarrow \textcircled{2}$$

Multiplying equ. $\textcircled{1}$ with 11 and subtracting it from equ. $\textcircled{2}$, we get

$$\begin{array}{r} 11x + 60y = 425 \\ -11x + 44y = -385 \\ \hline \end{array}$$

$$16y = 40$$

$$y = \frac{40}{16}$$

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

$$y = 2.5 \text{ Rs}$$

The price per kg of sugar is 2.5 Rs.