

EXERCISE 8C

The salary of a man is increased from ₹ 600 per month to ₹ 850 per month. Express the increase in salary

as percent.

Solution:

Salary of a man = ₹ 600

Increased salary of a man = ₹ 850

So the amount of increase = $850 - 600 = ₹ 250$

Here the percentage increase = $(250 \times 100) / 600$

We get

$$= 125/3$$

$$= 41 \frac{2}{3}\%$$

1. Increase:

(i) 60 by 5%

(ii) 20 by 15%

(iii) 48 by $12 \frac{1}{2}\%$

(iv) 80 by 140%

(v) 1000 by 3.5%

Solution:

(i) 60 by 5%

It is given that

Rate of increase = 5%

So the total increase = 5% of 60

We can write it as

$$= \frac{5}{100} \times 60$$

$$= 3$$

Here the increased number = $60 + 3 = 63$

(ii) 20 by 15%

Increase on 20 by 15% = $20 \times \frac{15}{100} = 3$

So the increased number = $20 + 3 = 23$

(iii) 48 by $12 \frac{1}{2}\%$

Increase on 48 by $12 \frac{1}{2}\%$ = $48 \times \frac{25}{2}\%$

We can write it as

$$= 48 \times \frac{25}{(2 \times 100)}$$

By further calculation

$$= 48 \times \frac{1}{8}$$

$$= 6$$

So the increased number = $48 + 6 = 54$

(iv) 80 by 140%

Increase on 80 by 140% = $80 \times \frac{140}{100} = 112$

So the increased number = $80 + 112 = 192$

(v) 1000 by 3.5%

Increase on 1000 by 3.5% = $1000 \times 3.5/100$

We can write it as
= $1000 \times 35/ (10 \times 100)$
= 35

So the increased number = $1000 + 35 = 1035$

2. Decrease:

(i) 80 by 20%

(ii) 300 by 10%

(iii) 50 by 12.5%

Solution:

(i) 80 by 20%

Decrease on 80 by 20% = $80 \times 20/100 = 16$

So the decreased number = $80 - 16 = 64$

(ii) 300 by 10%

Decrease on 300 by 10% = $300 \times 10/100 = 30$

So the decreased number = $300 - 30 = 270$

(iii) 50 by 12.5%

Decrease on 50 by 12.5% = $50 \times 12.5/100$

We can write it as
= $(50 \times 125)/ (10 \times 100)$
= $25/4$
= 6.25%

So the decreased number = $50 - 6.25 = 43.75$

3. What number:

(i) when increased by 10% becomes 88?

(ii) when increased by 15% becomes 230?

(iii) when decreased by 15% becomes 170?

(iv) when decreased by 40% becomes 480?

(v) when increased by 100% becomes 100?

(vi) when decreased by 50% becomes 50?

Solution:

(i) Consider 100 as the number

So the increase = 10% = 10

Increased number = $100 + 10 = 110$

If the increased number is 110 then the original number = 100

If the increased number is 88 then the original number = $100/110 \times 88 = 80$

(ii) Consider 100 as the number

So the increase = 15% = 15

Increased number = $100 + 15 = 115$

If the increased number is 115 then the original number = 100

If the increased number is 230 then the original number = $(100 \times 230)/ 115 = 200$

(iii) Consider 100 as the number

So the decrease = 15% = 15

Decreased number = $100 - 15 = 85$

If the decreased number is 85 then the original number = 100

If the decreased number is 170 then the original number = $100/85 \times 170 = 200$

(iv) Consider 100 as the number

So the decrease = $40\% = 40$

Decreased number = $100 - 40 = 60$

If the decreased number is 60 then the original number = 100

If the decreased number is 480 then the original number = $(100 \times 480)/60 = 800$

(v) Consider 100 as the number

So the increase = $100\% = 100$

Increased number = $100 + 100 = 200$

If the increased number is 200 then the original number = 100

If the increased number is 100 then the original number = $(100 \times 100)/200 = 50$

(vi) Consider 100 as the number

So the decrease = $50\% = 50$

Decreased number = $100 - 50 = 50$

If the decreased number is 50 then the original number = 100

If the decreased number is 50 then the original number = $(100 \times 50)/50 = 100$

4. The price of a car is lowered by 20% to ₹ 40,000. What was the original price? Also, find the reduction in price.

Solution:

Consider ₹ 100 as the original price of the car

The price reduction = $20\% = ₹ 20$

So the reduced price = $100 - 20 = ₹ 80$

If the reduced price of the car is ₹ 80 then the original price = ₹ 100

If the reduced price of the car is ₹ 40,000 then the original price = $(100 \times 40000)/80 = ₹ 50,000$

Reduction = $50000 - 40000 = ₹ 10,000$

5. If the price of an article is increased by 25%, the increase is ₹ 10. Find the new price.

Solution:

Consider ₹ 100 as the price of an article

The price of the article is increased = $25\% = ₹ 25$

So the increased price = $100 + 25 = ₹ 125$

If the increase in the price is ₹ 25 then the new price = ₹ 125

If the increase in the price is ₹ 10 then the new price = $(125 \times 10)/25 = ₹ 50$

6. If the price of an article is reduced by 10%, the reduction is ₹ 40. What is the old price?

Solution:

Consider ₹ 100 as the original price of an article

The price is reduced = $10\% = ₹ 10$

If the reduced price is ₹ 10 then the old price = ₹ 100

If the reduced price is ₹ 40 then the old price = $(100 \times 40)/10 = ₹ 400$

7. The price of a chair is reduced by 25%. What is the ratio of:

(i) change in price to the old price.

(ii) old price to the new price.

Solution:

Consider ₹ 100 as the original price of the chair

The price of the chair is reduced = 25% = ₹ 25

So the reduced price = $100 - 25 = ₹ 75$

(i) Ratio of change in price to the old price = 25: 100

Dividing by 25

= 1: 4

(ii) Ratio of old price to the new price = 100: 75

Dividing by 25

= 4: 3

8. If x is 20% less than y, find:

(i) x/y

(ii) $y - x/y$

(iii) $x/y - x$

Solution:

Consider $y = 100$

Reduction = 20% = 20

$x = 100 - 20 = 80$

(i) $x/y = 80/100$

Dividing by 20

= $4/5$

(ii) $(y - x)/y = (100 - 80)/100$

So we get

= $20/100$

Dividing by 20

= $1/5$

(iii) $x/(y - x) = 80/(100 - 80)$

So we get

= $80/20$

Dividing by 20

= $4/1$

= 4

9. If x is 30% more than y; find:

(i) x/y

(ii) $y + x/x$

(iii) $y/y - x$

Solution:



Consider $y = a$

We know that

$$x = a \times (100 + 30) / 30$$

By further calculation

$$= a \times 130 / 100$$

$$= 13/10 a$$

$$(i) x/y = 10/13/10 a$$

We can write it as

$$= (a \times 10) / 13a$$

$$= 10/13$$

$$(ii) y + x/x = (a + 13/10 a) / 13/10 a$$

We can write it as

$$= (10 + 13)a / (10 \times 13/10 a)$$

By further calculation

$$= 23a/10 \times 10/13a$$

So we get

$$= 23/13$$

$$(iii) y/y - x = a / (a - 13/10 a)$$

We can write it as

$$= a / -3/10 a$$

So we get

$$= (a \times 10) / -3a$$

$$= -10/3$$

10. The weight of a machine is 40 kg. By mistake, it was weighed as 40.8 kg. Find the error percent.

Solution:

Weight of the machine = 40 kg

Error weight of the machine = 40.8 kg

Error in weight = 40.8 – 40 = 0.8 kg

So the error percent = $(0.8 \times 100) / 40$

We can write it as

$$= (8 \times 100) / (10 \times 40)$$

$$= 2\%$$

11. From a cask, containing 450 litres of petrol, 8% of the petrol was lost by leakage and evaporation. How many litres of petrol were left in the cask?

Solution:

Petrol in the cask = 450 litres

Petrol lost by leakage and evaporation = 8%

So the petrol lost = 8% of 450 litres

We can write it as

$$= (8 \times 450) / 100$$

$$= 36 \text{ litres}$$

Petrol left in the cask = 450 – 36 = 414 litres

12. An alloy consists of 13 parts of copper, 7 parts of zinc and 5 parts of nickel. What is the percentage of each metal in the alloy?

Solution:

In an alloy

Copper = 13 parts

Zinc = 7 parts

Nickel = 5 parts

So the total alloy = $13 + 7 + 5 = 25$ parts

Percentage of copper = $13/25 \times 100 = 52\%$

Percentage of zinc = $7/25 \times 100 = 28\%$

Percentage of nickel = $5/25 \times 100 = 20\%$

13. In an examination, first division marks are 60%. A student secures 538 marks and misses the first division by 2 marks. Find the total marks of the examination.

Solution:

Marks for first division = 60%

A student gets 530 marks and misses the first division by 2 marks

Marks for first division = $538 + 2 = 540$

60% of total marks = 540

We can write it as

$60/100 \times \text{total marks} = 540$

So we get

Total marks = $(540 \times 100)/60 = 900$

14. Out of 1200 pupils in a school, 900 are boys and the rest are girls. If 20% of the boys and 30% of the girls wear spectacles, find:

(i) how many pupils in all wear spectacles.

(ii) what percent of the total number of pupils wear spectacles.

Solution:

Number of pupils = 1200

Number of boys = 900

Number of girls = $1200 - 900 = 300$

Number of boys who wear spectacles = 20% of 900

We can write it as

$= 20/100 \times 900$

$= 180$

Number of girls who wear spectacles = 30% of 300

We can write it as

$= 30/100 \times 300$

$= 90$

(i) Number of pupils in all wear spectacles = $180 + 90 = 270$

(ii) Percent of the total number of pupils wear spectacles = $(270 \times 100)/1200$

So we get

$= 270/12$

$= 22.5\%$