# Percentage

**Solution:**

1) let a, b and c be the ages of mother daughter and infant respectively
   a+b+c=74
   a=b+c+46 (given)
   c=b-60%of b
   c=0.4b
   in eq 1
   b+c+46+b+c=74
   b+0.4b+b+0.4b=28
   2.8b=28
   b=10kgs(weight of daughter)
   c=4kgs(of infant)
   and a =60kgs(of mom)

2) Let initially there were 100 labor and total work load was 100 units, so each labors work=1 unit.

   When there are 33.33% or 100/3 more labor,

   Total laborers=100+100/3 = 400/3

   As 400/3 labors has to complete the same work of 100 units

   So each labors work = *Work/No. of Labourers new* = 100/400/3 = 3/4 unit.
   Hence % reduction in the work load of each labor = (1 – 3/4 )*100 = 100/4 = 25%

3) Three candidates contested an election and received 2561, 8000 and 15721.

   Total number of votes polled =(2561+8000+15721 )=26282
   So, required percentage =15721/26282 X 100=59.81%

4) Paper A got 18 out of 70

   AS such % 18/70 ×100 = 25.71

   Paper B got 14 out of 30

   So % 14/30 ×100=46.66

   Well in paper B

5) $40,000*(3/4)^3=16875$

6) Total no. of votes=x
   so 30/100 x=1200
   x=4000.
   Therefore, 70/100 *4000= no. of votes for 70%

7) Population 3 years hence :-

Current Population = 121000

Rate = 10% per annum

Time = 3 years

So,

→ Population after 3 years = Current Population * [1 + (rate/100)]^(time)

→ Population after 3 years = 121000[1 + (10/100)]³

→ Population after 3 years = 121000[1 + (1/10)]³

→ Population after 3 years = 121000 * (11/10)³

→ Population after 3 years = 121000 * (1331/1000)

→ Population after 3 years = 161051

Population 2 years ago :-

→ Current Population = 121000

→ Rate = 10% per annum

→ Time = 2 years

So,

→ Current Population = Population 2 years ago * [1 + (rate/100)]^(time)

→ 121000 = Population 2 years ago[1 + (10/100)]²

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→ 121000 = Population 2 years ago * (11/10)²

→ 121000 = Population 2 years ago * (121/100)

→ Population 2 years ago = (121000 * 100)/121

→ Population 2 years ago = 100000

therefore,

→ Required difference = 161051 - 100000 = 61051 (Ans.)

8) Present population $=50000(1-5/100/10)^2$
$=50000\times95/100 \quad \times95/100$
$=45125$

9) Party 2 and 3 Got 12 and 43% Respectively = 55% as a whole.
55% of 16000 = 8800 and Party 1 got 45% Vote = 45% of 16000 = 7200.
Margin of Votes = 8800 -7200 =1600

10) Let us assume that, the marked price of the item is Rs.100 .

Case 1) :-

→ marked price = Rs100

→ commission = 12%.

Than,

→ Selling Price = List Price * (100 - commission%) / 100 = {100 * (100 - 12)} / 100 = Rs.88

Now, we have ,

→ selling Price of magazine = Rs.88

→ Profit % = 20%.

Than,

→ Cost Price of magazine = (Selling Price * 100) / (100 + Profit%) = (88 * 100) / (100 + 20) = (88 * 100) / 120 = Rs.(220/3).

Case 2) :-

→ marked price = Rs.100

→ commission = 23%.

Than,

→ Selling Price = marked Price * (100 - commission%) / 100 = {100 * (100 - 23)}/ 100 = Rs.77

Now, we have ,

→ selling Price of magazine = Rs.77

→ Cost Price of magazine = Rs.(220/3) .

Therefore,

» Profit = selling Price - cost Price = 77 - (220/3) = Rs.(11/3) .

Hence,

→ Gain % = (gain in Rs. * 100) / (cost Price)

→ Gain % = (11 * 100 * 3) / (3 * 220)

→ Gain % = 5% (Ans.)

11)
According to the question
120×[(100-x）/100]=40×[(100+x）/100]
=(100-x）/(100 +x)=40/120=1/3
=x=50
Now, x% of 210 = 210 × 50/100=105
= (x + 20)% of 180 = 180×70/100=126
:Required percentage=[(126-105)/126]×100=16 2/3%

12) Let the expenditure of Raju=100Rs.
So, income of Raju=120Rs.
Hence, the saving amount=20Rs.
When the income was increased by 60%,
then the new income amount= 120 ×160/ 100 = 192Rs.
The increased expenditure= 170×100/100=170Rs.
Hence, the new saving amount= 192 - 170 = 22Rs
Hence, the required percentage = (22-20)×100/20= 2×100 /20 = 10%

13) Let the income of B be 4x.
The income of A = 4x + 25% of 4x = 5x
The income of C = (4x + 5x) × [35/100] = 3.15x
:. Required percentage =[(5x- 3.15x)/5x]× 100 = 37%

14) Students failed in English only = (50 - 15)% = 35%
Students failed in Math only = (40 - 15)% = 25%
Students failed in both subjects = 15%
Therefore, Students failed in either or both subjects = 35 + 25 + 15 = 75%
Therefore, Students passed in both subjects = (100 - 75)% = 25%
But students passed = 200 (i.e. 8 times of 25)
Therefore, Students appeared = 8 × 100 = 800

15) Let total sales be 100a and price of each item be 100b
So, Total Revenue = 10000ab
Price after 20% reduction = 80a
10000ab(1 + 25%) = 80b × 100a(1 + x%)
⇒ 12500ab = 8000ab × (100 + x)/100
⇒ 1250/8 = 100 + x
⇒ 8x = 450
⇒ x = 56.25%
∴ The value of x is 56.25%

16) We know,20%=1/5 30%=3/10 & 25%=1/4
Ratio of A to B =4: 5 ----(1)
Ratio of C to D = 13:10 -(2)
Ratio of D to A =3:4 -- -(3)
= Ratio of A,B and D=4:5: 3 ·(4)
:. Ratio of A, B,C and D=40:50:39:30
=C : B=39:50
= C/B=39/50
=C=39/50× B
=C=0.78B

17) (100× 100) /120 = 83.33 kg
Let the man have Rs 100 and price of 100 kg sugar is Rs 100
Now price is increased,
New price of sugar =Rs 120 for 100 kg
And man his increase his expenditure by 8% = Rs 108
So, man will buy in Rs 108 = （100×108)/ 120 =90 kg
So he have to decrease his consumption by 100 -90=10%.

18) 15%-→ 75
100%-→ 500

19) Let income of Sudha be 200x·
Saving of Sudha =200x X [15/100]=30x
Expenditure of Sudha = 200x-30x=170x
New Expenditure of Sudha = 170x X [6/5] =204x
New Savings of Sudha = 30x X [8/5] = 48x
New income of Sudha = 204x + 48x= 252x
New income increased by = 252x-200x=52x
..Required percentage =[52x/200x]× 100=26%

20) Let the income of Surbhi=100
Surbhi spends 75% of her income
Expenditure of Surbhi=75
Savings of Surbhi=25
Income increases by 20%,
→ The new income of Surbhi=120
Savings decrease by 1%
New savings =99/100×25= 99/4
New Expenditure=New Income - New savings=120 – 99/4 = 381/4
Increase in expenditure =381/4 – 75 = 81/4
.". Percentage increase in expenditure=81/4 /75×100=81/(4X75) ×100=27%