Tricks to solve Percentage Problems

Percentage is a fraction whose denominator is always 100. x percentage is represented by x%.

To express x% as a fraction :

We know

$x\% = {}^{x}/_{100}$

Thus $10\% = {}^{10}/_{100}$ (means 10 parts out of 100 parts)

$= {}^{1}/_{10}$ (means 1 part out of 10 parts)

To express x/y as a percentage :

We know that ${}^{x}/_{y} = ({}^{x}/_{y} \times 100)$

Thus ${}^{1}/_{4} = ({}^{1}/_{4} \times 100)\% = 25\%$

and $0.8 = ({}^{8}/_{10} \times 100)\% = 80\%$

If the price of a commodity increases by R%, then reduction in consumption as not to increase the expenditure is-

$[\ {}^{R}/_{(100+R)} \times 100\ ]\ \%$

If the price of a commodity decreases by R%, then the increase in consumption as not to decrease the expenditure is -

$[\ {}^{R}/_{(100-R)} \times 100\ ]\ \%$

Result on Population :

Let the population of a town be P now and suppose increases the rate of R% per annum, then :

1. Population after n years = $P\left(1+\frac{R}{100}\right)^n$
2. Population n years ago = $\frac{P}{\left(1+\frac{R}{100}\right)^n}$

Result on Depreciation :

Let the present value of a machine be P. Suppose depreciates at the rate of R% per annum Then :

1. Value of the machine after n Years

$= P\left(1-\frac{R}{100}\right)^n$

2. Value of the machine n years ago

$= \frac{P}{\left(1-\frac{R}{100}\right)^n}$

- If A is R% more than B, then B is less than A by

$\left[\frac{R}{(100+R)}\times 100\right]\%$

If A is R% less than B, then B is more than A by

$\left[\frac{R}{(100-R)}\times 100\right]\%$

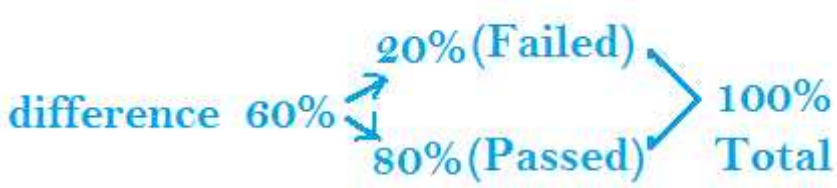
- Net % change = $x + y + xy/100$

Some Observation

#1

If 20% candidate failed in an exam then observations are

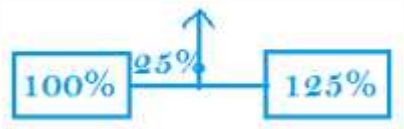
- 80% represent passed in exam
- 100% represent total appeared in exam
- (80%-20%) = 60% represent difference between passed and failed candidate in exam



#2

If a number is increased by 25% then observations are

- 100% represent the old number
- 125% represent the new number.



#3

Remember that Base in the given sentence (Question) is always 100%

Eg. Income of Ram is increased by 20%

In this sentence

100% - represent the income of Ram

20% - represent increment

120% - represent new income of Ram.

Remember it :

1 = 100%

1/2 = 50%

1/3 = 33 1/3%

1/4 = 25%

1/5 = 20%

1/6 = $16^{2}/3\%$

1/7 = $14^{2}/7\%$

1/8 = $12^{1}/2\%$

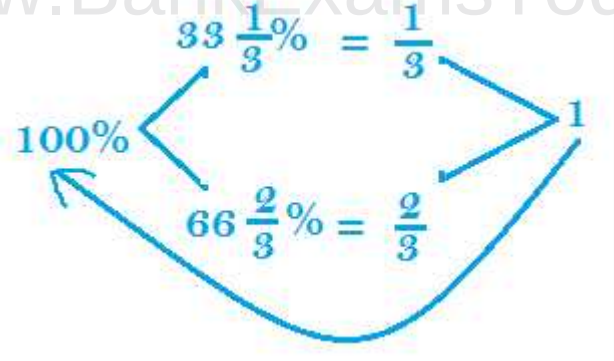
1/9 = $11^{1}/3\%$

1/10 = 10%

1/11 = $9^{1}/11\%$

1/10 = $8^{1}/3\%$

1/13% = $7^{9}/13\%$



25% = 1/4

6.25% = 1/16

125% = 5/4

150% = 3/2

200% = 2

350% = 7/2

Examples

#1

Q. If the difference between 62% of a number and 3/5th of that number is 36. what is the number ?

Sol:

Let the number be x.

Then x × 62% - x × $^{3}/5$ = 36

x ×62% -x V 60% = 36 (60% = 3/5)

x ×2% = 36

x ×$^{2}/100$ =36

x = $^{36\times100}/2$ = 1800

#2

Q. 40% of Ram's income Rs. 1200 Then Find

1. **75% of Ram's income ?**
2. **1/4 part of Ram's income ?**
3. **1/3 part of Ram's income ?**

Sol :

(1)

40% = 1200 Rs.

75% = 1200/40 ×75 = 2250 Rs.

Trick : 1200 / 40 × 75 = Rs. 2250/-

(2)

40% of income = Rs. 1200

Then 1/4 part (i.e. 25%) of Ram's

income = 1200/40 ×25

= Rs. 750/- Ans

(3)

40% of Ram's income

= Rs. 1200

i.e. 2/5 part of Ram's income

= Rs. 1200

Then total income of Ram

= Rs. 1200 ×5/2

1/3 part of Ram's income

= Rs. 1200 × 5/2 × 1/3

= Rs. 1000 Ans.

Trick :

$^{1200}/_{2/5} \times 1/3$

$= {}^{1200}/2 \times {}^{5}/3 = 1000$