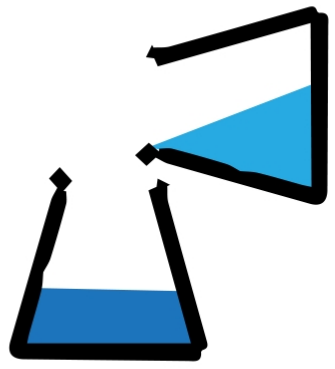
Swipe >>>

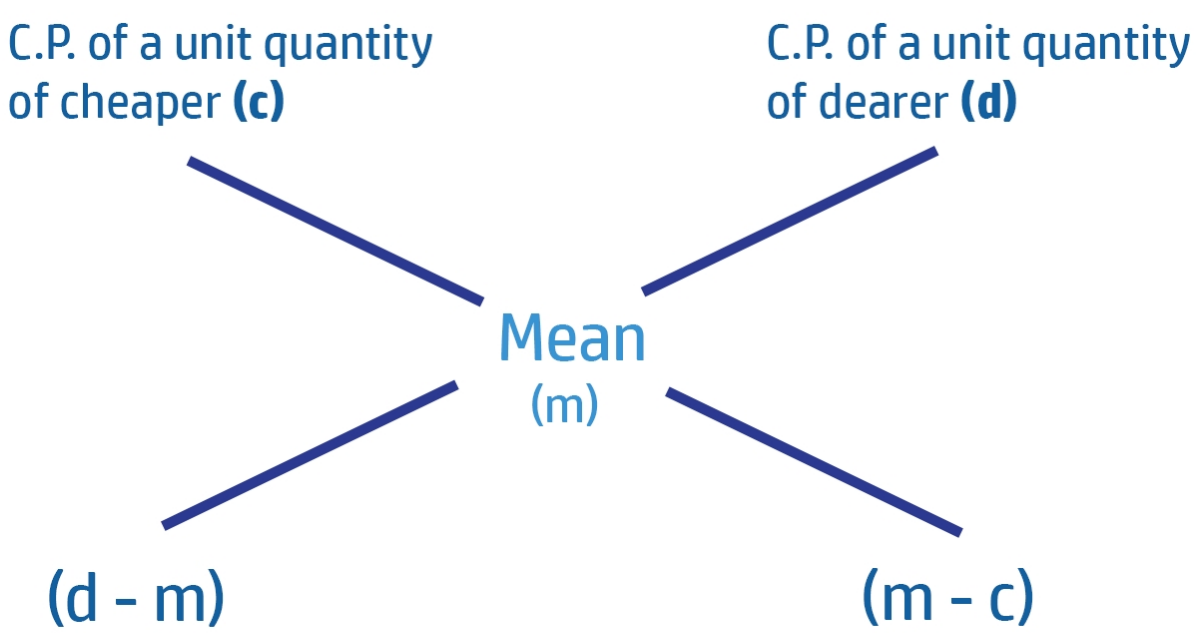
Aptitude

Aptitude | Average Mixture

If two ingredients are mixed :



$$\frac{\text{Quantity of cheaper}}{\text{Quantity of dearer}} = \frac{\text{C.P. of dearer - Mean Price}}{\text{Mean price - C.P. of cheaper}}$$

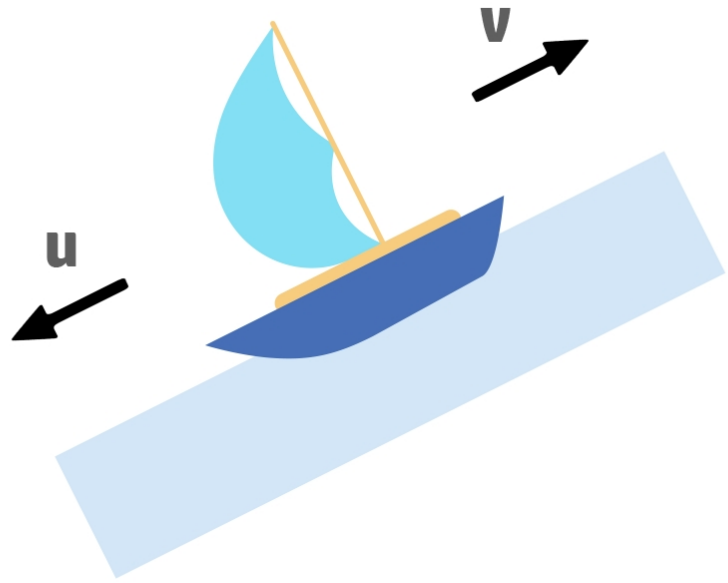


(Cheaper quantity) : (Dearer quantity) = (d - m) : (m - c)

Aptitude | Boat and Stream

- Average Speed for 1 trip :

$$S_{avg} = \frac{U^2 - V^2}{U}$$



U = Speed in Upstream
V = Speed in Downstream

- If $Time_{up} = n \times Time_{down}$ then,

$$\frac{U}{V} = \frac{n+1}{n-1}$$

Aptitude | Combination

Combination is the **selection** of items in which **order doesn't matters**.

When repetition is allowed:

$$C(n,r) = \frac{n!}{(n-r)!\ r!}$$

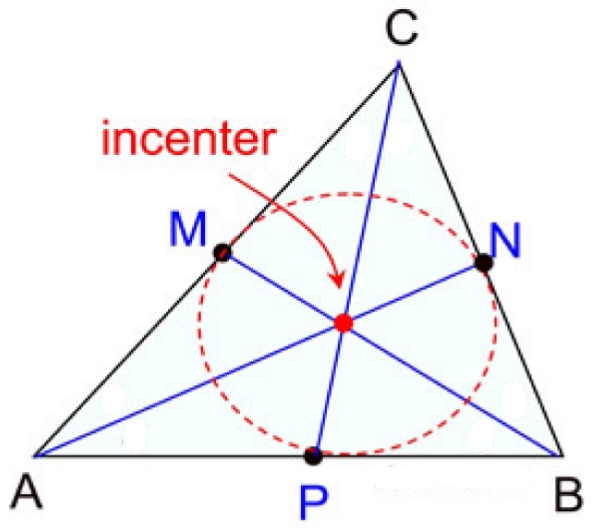
When repetition is not allowed:

$$C(n,r) = \frac{(n+r-1)!}{(n-1)!\ r!}$$

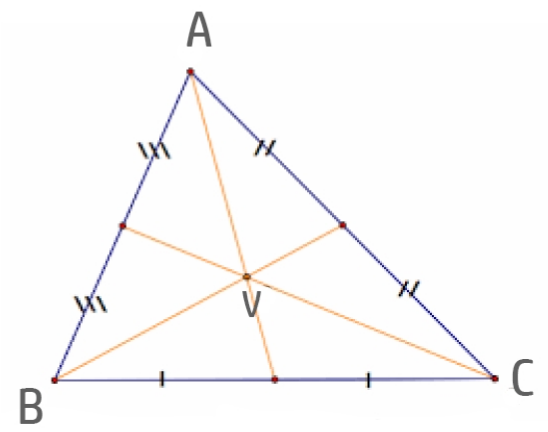
Aptitude | Geometry

Incenter :

It is the intersection of the three angle bisectors of the triangle. It is also the center of the incircle of the triangle. Here, I is the incentre.



Centeroid :

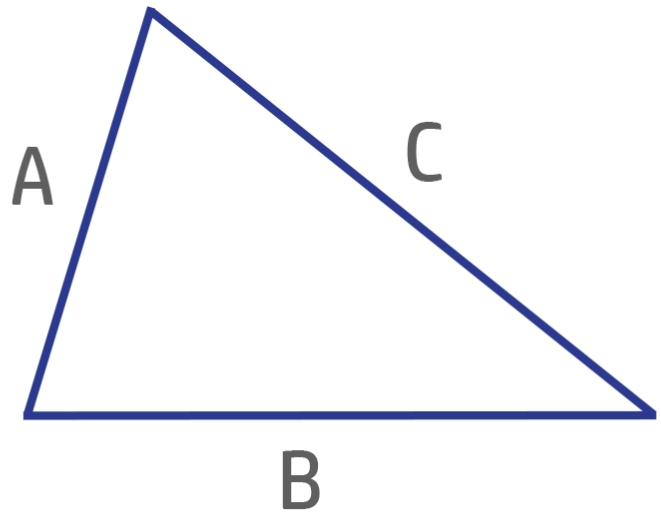


A triangle can have only three medians which intersect at the point known as the centroid. The centroid divides the length of the medians in 2:1 ratio. Here, V is the centroid.

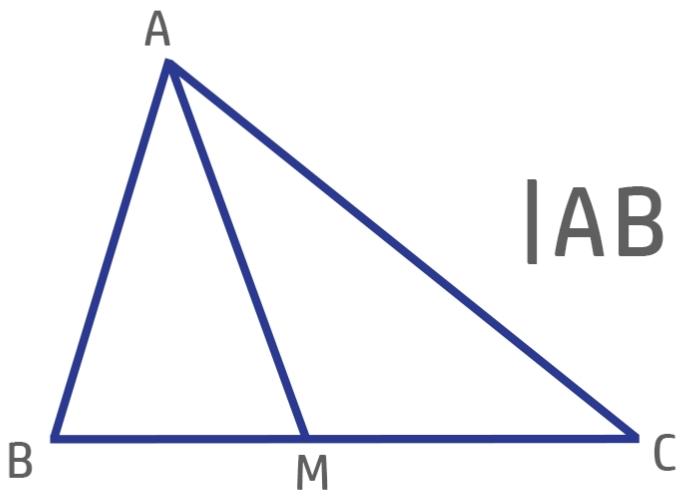
Aptitude | Geometry

Area of triangle ABC is

$$\sqrt{s\,(s-a)\,(s-b)\,(s-c)}$$



Where, $S = \frac{(a+b+c)}{2}$



$$|AB|^2 + |AC|^2 = 2(|AM|^2+|BM|^2)$$

Aptitude | HCF and LCM

- If x and y are two numbers, such that x>y. Then,

H.C.F(x,y) >= x

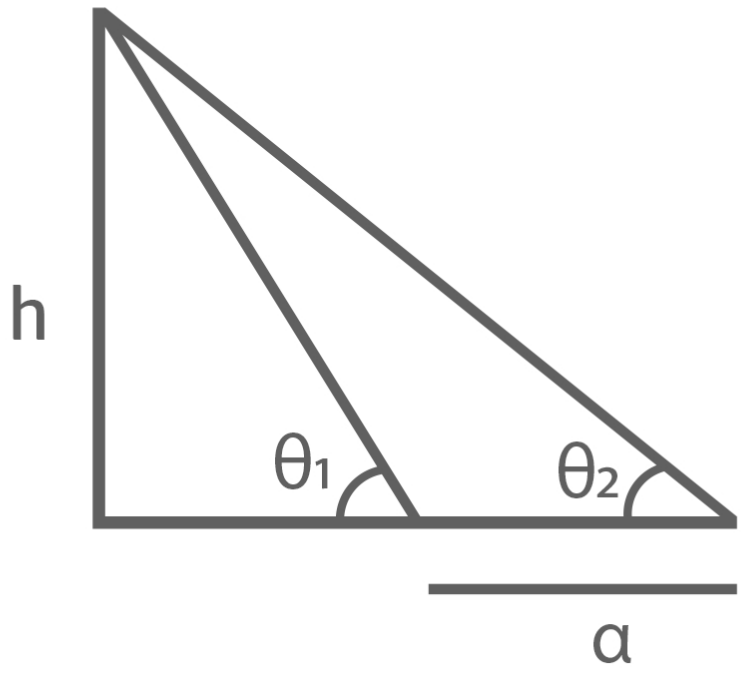
- The greatest number which divide x, y, z to leave remainders a, b, c is

H.C.F of (x – a), (y – b) and (z – c)

- The smallest number which when divided by x, y and z leaves remainder of a, b, c (x – a), (y – b), (z – c) are multiples of M

Required number = (L.C.M of x, y and z) – M

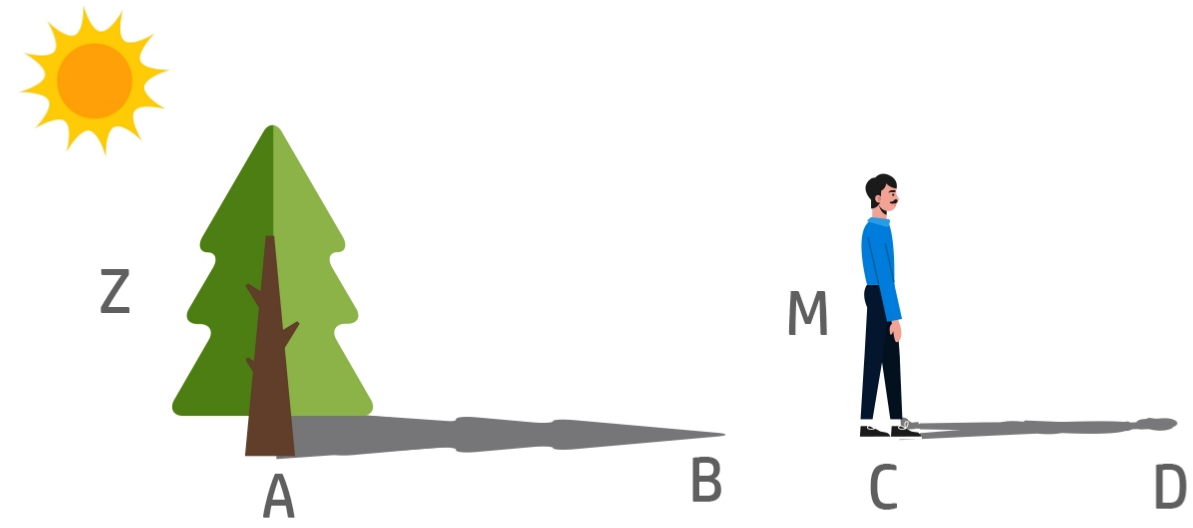
Aptitude | Height and Distance



$$\alpha = h(\cot \theta_1 - \cot \theta_2)$$

Relation between the shadow of the man and the tree

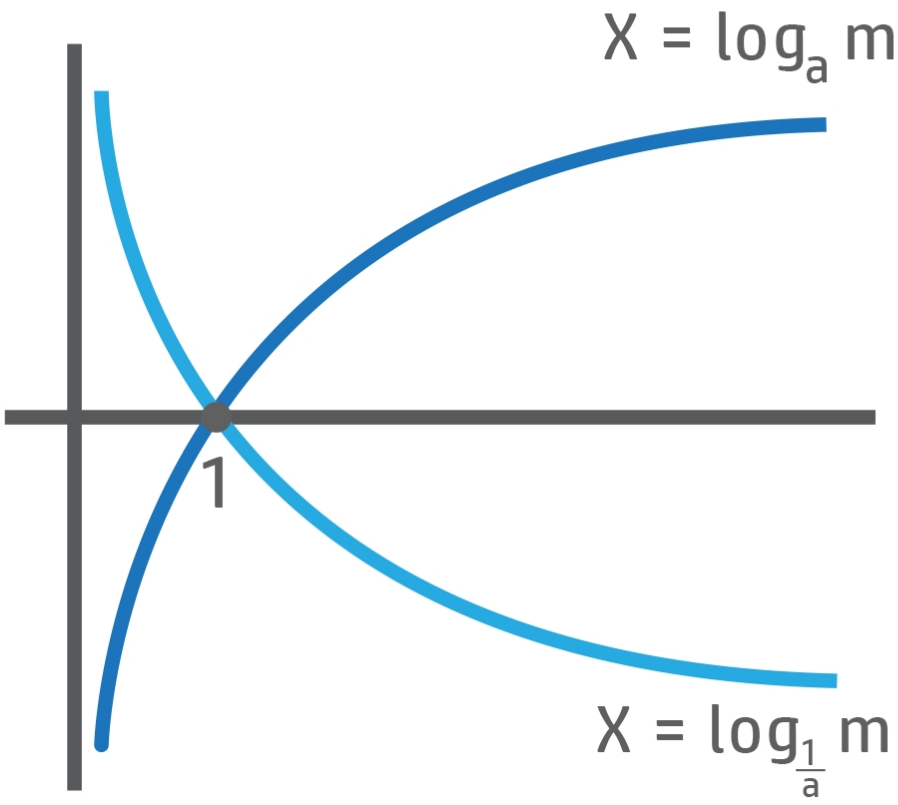
$$\frac{AB \times M}{CD} = Z$$



Aptitude | Logarithms

If **x,a** and **m** are any three numbers connected by the relation: $\mathbf{m = a^x}$ then,

- $X = \log_a m$
- $m = a^{\log_a m}$
- $X = \log_a a^x$
- $\log_a 1 = 0$



Aptitude | Number System

Unit digit of X = Unit digit of X^5 = Unit digit of X^{5n}

In order to find the unit digit of X^z, divide z by 4 and find the Unit digit of the reminder

Unit digit of 6^7

7%4 =3

Unit digit of 6^7= Unit digit of 6^3

Calculating the number of zeros at the end of the factorial of a number

Divide the number by 5, the quotient obtained is again divided by 5 and so on till the last quotient obtained is smaller than 5. The sum of all the quotients is the number of 5s, which then becomes the number of zeroes in the given number.

Aptitude | Number System

$$\sum n = \frac{n(n+1)}{2} \qquad \sum n^2 = \frac{n(n+1)(n+2)}{6} \qquad \sum n^3 = \frac{n^2(n+1)^2}{4}$$

$$x^n + y^n = (x + y)\,(x^{n-1} - x^{n-2}\,y + x^{n-3}\,y^2 - \ldots + y^{n-1})$$

(for n = odd)

$$x^n - y^n = (x + y)\,(x^{n-1} - x^{n-2}\,y + \ldots\, y^{n-1})$$

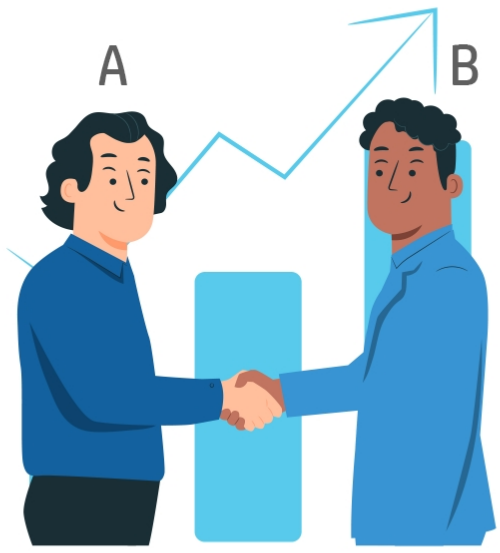
(for n = even)

$$x^n - y^n = (x - y)\,(x^{n-1} + x^{n-2}y + \ldots. + y^{n-1})$$

(for n = odd & even)

Aptitude | Percentage

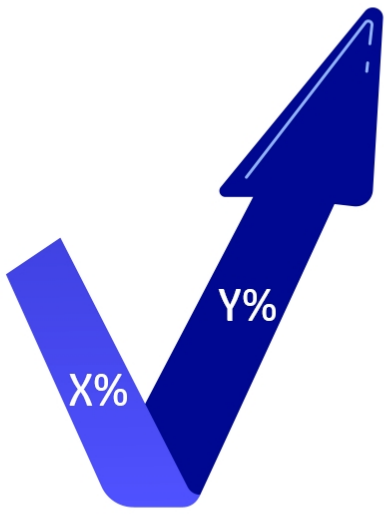
If A's salary is **X%** more than B then B's salary is $\frac{X}{(100+X)} \times 100\%$ less than A's salary.



If a number is increased by **R %**, and then it is decreased by **R %**, then in total there would be a decrease of $\frac{R^2}{100}$ %

If a number is decreased by **X %**, and then it is increased by **Y %**. Then the total increase in the no. will be

$$\frac{X+Y+XY}{100} \%$$

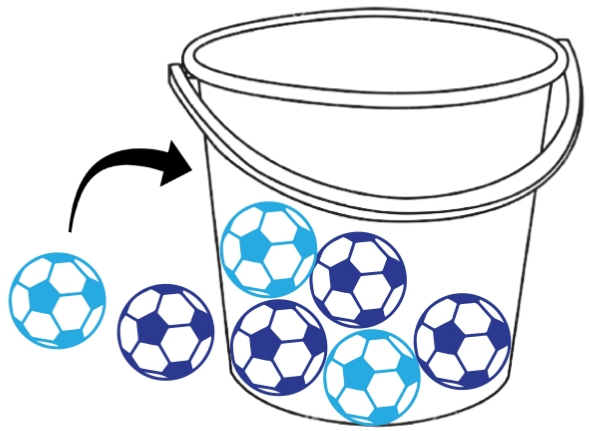


Aptitude | Permutation

Permutation is the **selection** and **arrangement** of items in which **order matters**.

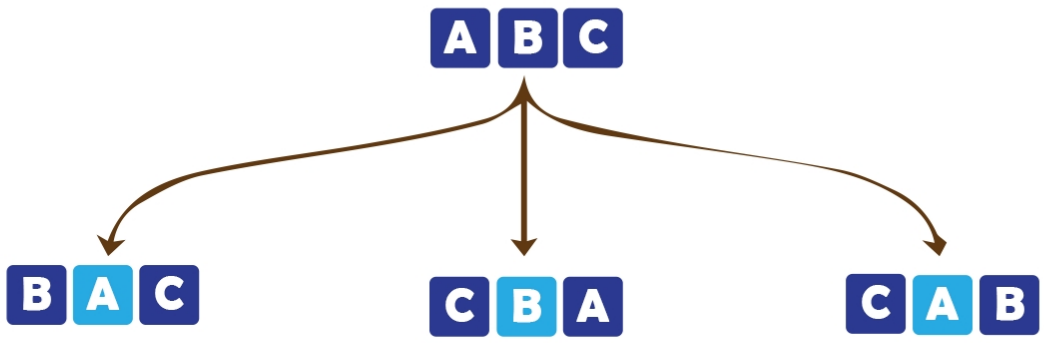
When repetition is allowed:

$$P(n,r) = n^r$$



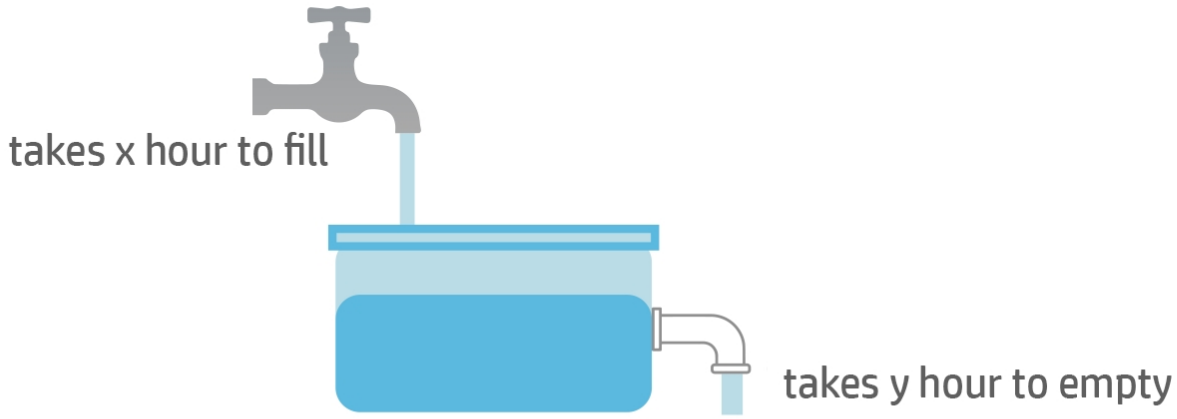
When repetition is not allowed:

$$P(n,r) = \frac{n!}{(n-r)!}$$



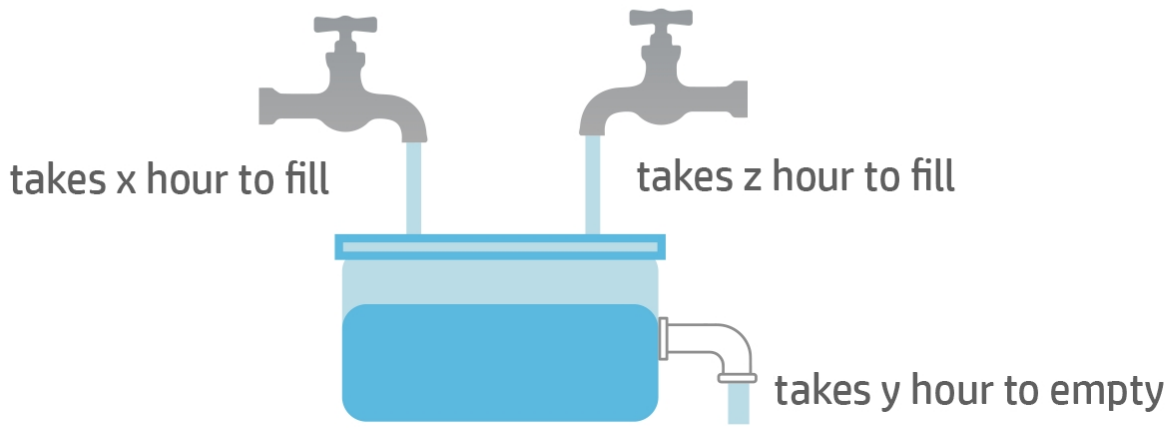
Aptitude | Pipes and Cisterns

For 1 inlet and 1 outlet:



So in 1 hour = $\frac{x\,y}{|y-x|}$ part of the tank will be filled

For 2 inlet and 1 outlet:



So in 1 hour = $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$ part of the tank will be filled

Aptitude | Probability

The probability of picking up one ball of each colour, if a bucket has x and y balls of two colours is

$$P_{(\text{one ball of each colour})} = \frac{{}^{x}C_1 . {}^{y}C_1}{{}^{x+y}C_2}$$

Generic form of the above Equation is

$$P_{(\text{one ball of each colour})} = \frac{{}^{x}C_1 . {}^{y}C_1 .... {}^{z}C_1}{{}^{x+y...+z}C_{1+1+...+1}}$$

Aptitude | Profit and Loss

A product is sold at **m%** profit.
It is again sold at **n%** profit, then
the actual cost of the product is

$$100 \times 100 \times \frac{P}{(100+m)(100+n)}$$

A product is sold at **m%** loss.
It is again sold at **n%** loss, then
the actual cost of the product is

$$100 \times 100 \times \frac{P}{(100-m)(100-n)}$$

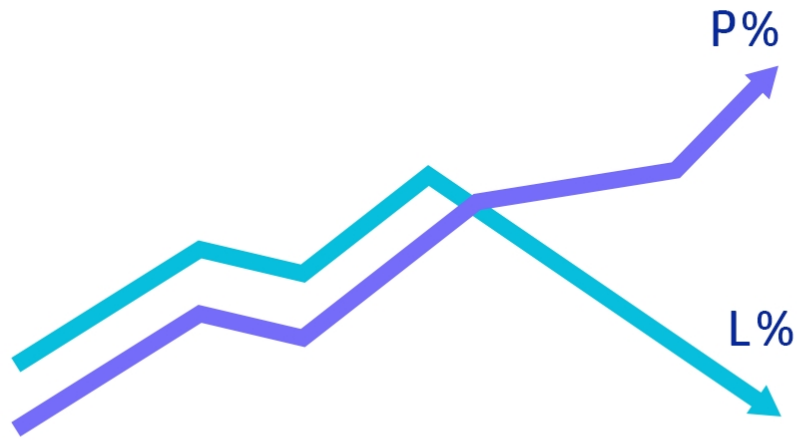
If **P%** and **L%** are equal, then **P=L** and selling price is Rs.**X**

$$\%Loss = \frac{2P^2(X)}{100^2-P^2}$$

Aptitude | Profit and Loss

$$CP = \frac{100}{100+P\%} \times SP$$

$$CP = \frac{100}{100-L\%} \times SP$$

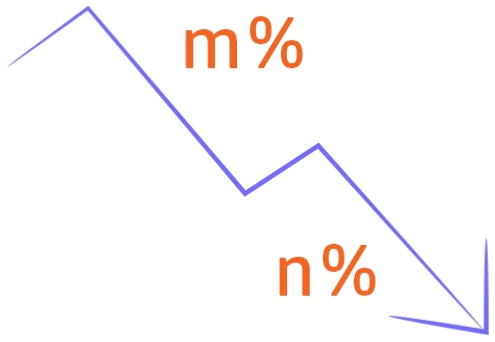


When there are two successful profits m% and n% then net profit is

$$\frac{(m+n+mn)}{100}$$

When there are two successful losses m% and n% then net profit is

$$\frac{(m-n-mn)}{100}$$



Aptitude | Progression

- Let us assume two numbers **a** and **b**. Let **m** be the arithmetic mean of a and b. So, a, b, m are in Arithmetic Progression(AP)

$$m-a = b-m$$

- Let us assume two numbers **a** and **b**. Let **G** be the geometric mean of a and b. So, a, b, m are in Geometric Progression(GP)

$$\frac{G}{a} = \frac{b}{G}$$

- In Geometric Progression(GP):

$$S_n = \frac{a_1(1-r^n)}{1-r} \qquad r \neq 1$$

Aptitude | Progression

- Suppose $a_1, a_2, a_3, \ldots$ is an **A.P**. and $b_1, b_2, b_3, \ldots\ldots$ is a **G.P**. Then the sequence $a_1b_1, a_2b_2, \ldots$, is said to be an **arithmetic-geometric progression**. General form of A.G.P is

$$ab, (a+d)br, (a + 2d)br^2, (a + 3d)br^3, \ldots$$

- Sum of **n** terms of A.G.P series,

$$S_n = \frac{a}{1-r} + dr\frac{(1-r^{n-1})}{(1-r)^2} - \frac{\{a+(n-1)d\}r^n}{1-r} \quad r \neq 1$$

- Sum of term of **infinite** series in GP

$$S_\infty = \frac{a}{1-r} + \frac{dr}{(1-r)^2} \quad \{-1 < r < 1\}$$

Aptitude | Ratio and Proportion

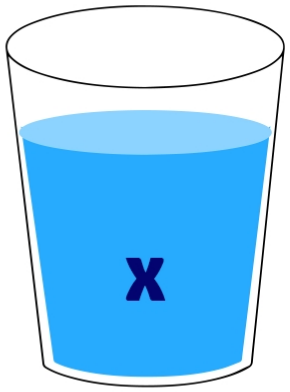
If $\frac{u}{v} = \frac{x}{y}$

- then $\frac{u+v}{v} = \frac{x+y}{y}$
- then $\frac{u-v}{v} = \frac{x-y}{y}$
- then $\frac{u+v}{u-v} = \frac{x+y}{x-y}$

If $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$ and $a+b+c \neq 0$ then,

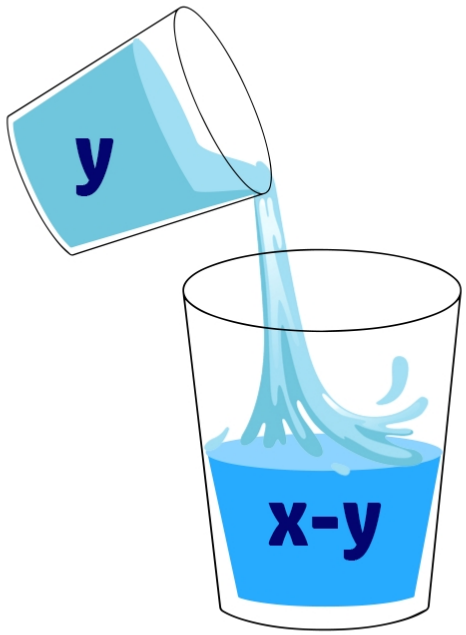
$a = b = c$.

Aptitude | Ratio and Proportion



A container contains **x** liquids

y amount of liquid is removed and replaced by water

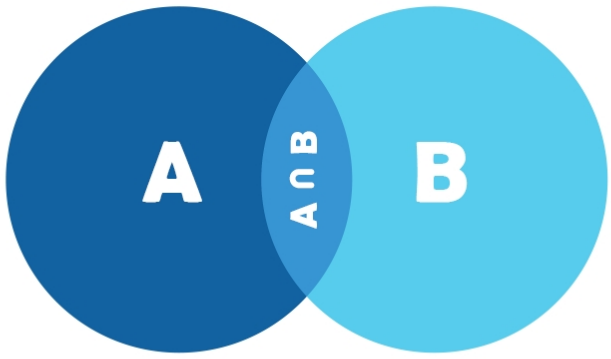


If the above process is continued **n** times , than volume of pure liquid is

$$x\left(1-\frac{y}{x}\right)^{n}$$

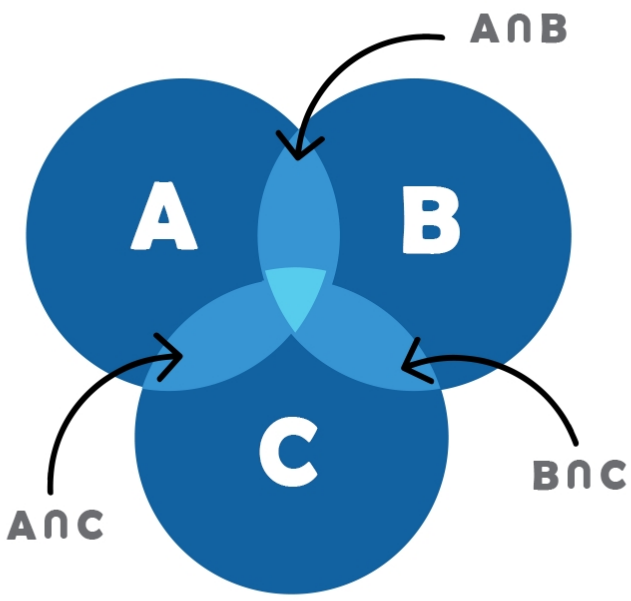
Aptitude | Union and Sets

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$



If A, B, C are finite set then,

$$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$$



Aptitude | Simple and Compound

Difference between the Compound and Simple Interest

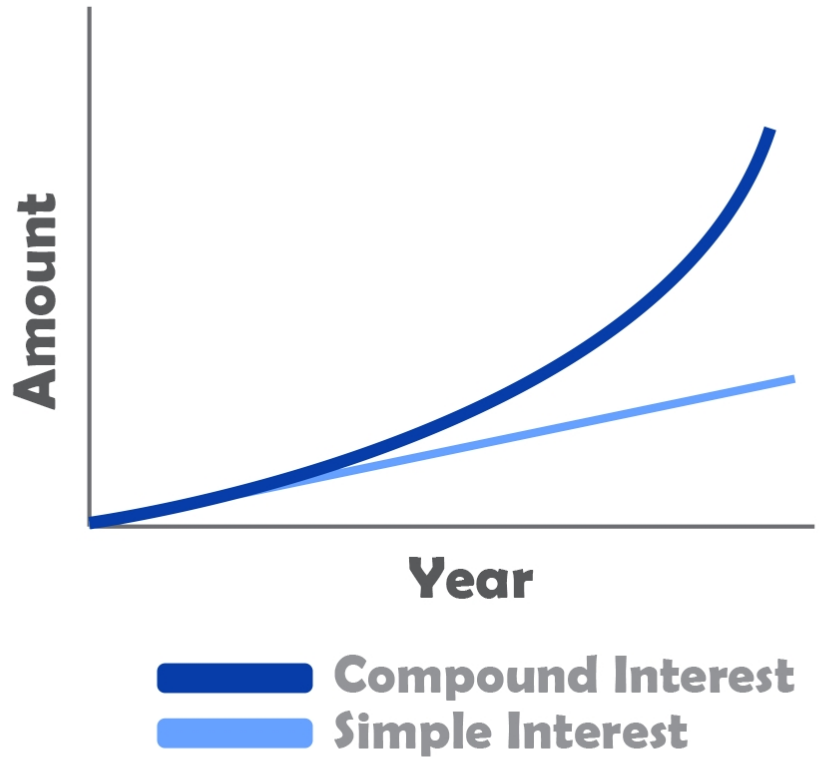
For two years:

$$CI - SI = \left(\frac{R}{100}\right)^2$$

For more than two years, than

$$CI - SI = \frac{R \times SI}{2 \times 100}$$

where, CI = Compound Interest
SI=Simple Interest
R=Rate of Interest

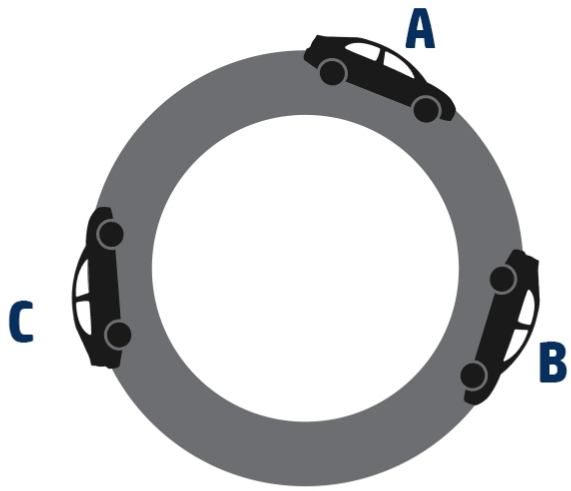


If a sum becomes **n** times in **t** years in CI, then same sum becomes $\mathbf{n^m}$ times in **mt** years.

(where m is a set natural number)

Aptitude | Speed and Distance

Objects moving in a Circular track:



If A,B,C are three Objects, moving in a circular track and T_1,T_2,T_3 are the time taken by them to complete one round respectively

LCM of times (T_1,T_2,T_3) = Least time taken to meet all of them in a single point

When objects are travelling in opposite direction:

$$\frac{\text{Speed of A}}{\text{Speed of B}} = \frac{\sqrt{\text{Time of B}}}{\sqrt{\text{Time of A}}}$$

Aptitude | Speed and Distance

Average Speed when Time is same

$$S_{avg} = \frac{S_1 + S_2}{2}$$

Average Speed when Distance is same

$$S_{avg} = \frac{2S_1S_2}{S_1 + S_2}$$

Aptitude | Surds and Indices

Multiplication rule with same indices:

$$P^n \times Q^n = (P \times Q)^n$$

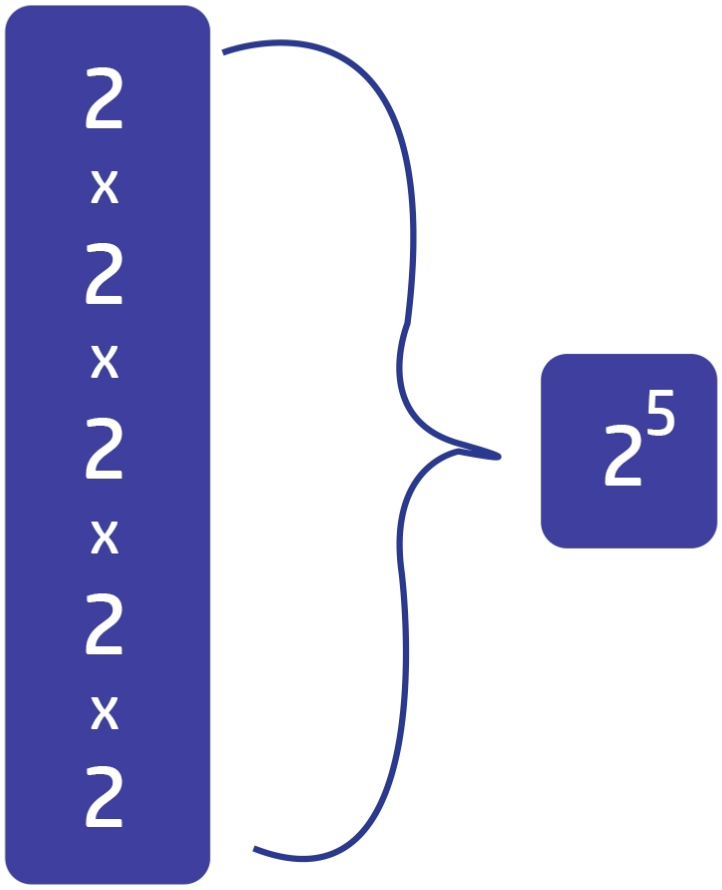
Indices power rules:

$$(a^n)^m = a^{nm}$$

$$\sqrt[n]{P} = P^{\frac{1}{n}}$$

Negative power rule:

$$P^{-n} = \frac{1}{P^n}$$



Aptitude | Time and Work

If **A** can complete a work in **D** days.

A's work in one day = $\frac{1}{D}$

Work done by **A** in **t** days = $\frac{t}{D}$

The ratio $\frac{\text{Men x Days x Hours}}{\text{Amount of Work}}$ always remains constant

i.e. $\frac{M_1 \times D_1 \times H_1}{W_1} = \frac{M_2 \times D_2 \times H_2}{W_2}$

Aptitude | Time and Work

If **A**,**B** can do a work together in x days.
If **B**,**C** can do a work together in y days.
If **C**,**A** can do a work together in z days.

A,**B**,**C** can do the same work together in $\frac{2xyz}{xy+yz+zx}$

Only **A** can do the same work together in $\frac{2xyz}{xy+yz-zx}$

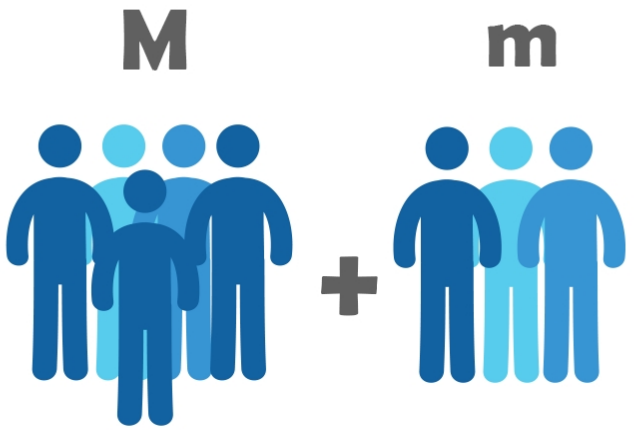
Only **B** can do the same work together in $\frac{2xyz}{-xy+yz+zx}$

Only **C** can do the same work together in $\frac{2xyz}{xy-yz+zx}$

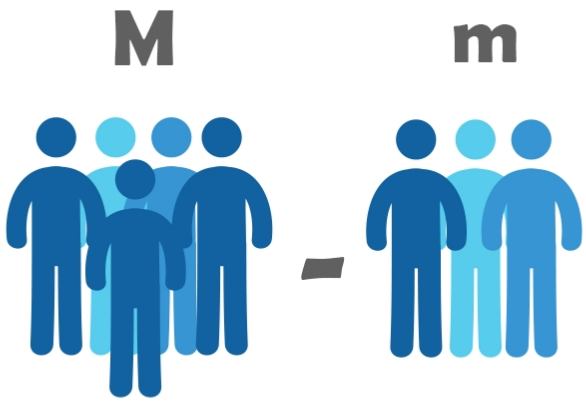
Aptitude | Time and Work

If **M** can do a work together in **D** days.

If there were **m** more men,
Work will be done in **d** less days.



$$M = \frac{m(D-d)}{d}$$



If there were **m** less men, Work will be done in **d** more days

$$M = \frac{m(D+d)}{d}$$

cs mock

About us :

CS Mock aims to smoothen the placement journey of college graduates by polishing their skills, highlighting the points of improvement and boosting their confidence. We provide 1-on-1 live mock interview and mentorship with industry professionals who are part of hiring team.

+91 9956127183

support@csmock.com

www.csmock.com