# Quantitative Aptitude Tricks - PDF Download

**Topics :**
1. Simplification
2. Number Series
3. Percentage
4. Profit and Loss
5. Simple Interest and Compound Interest
6. Ratio and Proportion
7. Time and Work
8. Time Speed and Distance

## #1 SIMPLIFICATION

### Q1.

$8^{12} \div 16^2$ of $32^3 \times \sqrt{256} = 2^?$

**Sol :**

$(2^3)^{12} \div (2^4)^2$ of $(2^5)^3 \times 16 = 2$

$2^{36} \div 2^8$ of $2^{15} \times 2^4 = 2^?$

$2^{17} = 2^?$

$? = 17$

### Q2.

$108 \div 36$ of $1/4 + 2/5 \times 3^{1}/4 = ?$

**Sol :**

$108 \div 9 + 2/5 \times 13/4 = ?$

$12 + 13/10$

$? = 13^3/10$

### Q3.

$33^1/3\%$ of $633 + 129 = 66^2/3\%$ of $= ?$

**Sol :**

$1/3 \times 633 + 129 = 2/3 \times ?$

$( 211+129 ) \times 3/2 = ?$

$? = 340 \times 3/2 = 170 \times 3 = 510$

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# #2 NUMBER SERIES

Basic Concept Starts From Here : <u>Click Here</u>

## Q1.

In each series only one number is wrong. Find out the Wrong number.

- 5531, 5506, 5425, 5304, 5135, 4910, 4621 **(IBPS PO 2012)**

**Hint: $-7^2, -9^2, -11^2$**

- 1, 3, 10, 36, 152, 760, 4632 **(IBPS PO 2012)**

**Hint :** $\times 1+2, \times 2+4, \times 3+6$ ...

- 4, 3, 9, 34, 96, 219, 435 **(IBPS PO 2012)**

**Hint :** $+1^3 -2$ , $+2^3 -2$ , $+3^3 -2$, ...

- 5, 7, 16, 57, 244, 1245, 7506 **(Allahabad Bank PO 2010)**

**Hint :** $\times 1+1^2, \times 2+2^2$

- 2.5, 3.5, 6.5, 15.5, 41.25, 126.75 **(Allahabad Bank PO 2010)**

**Hint :** $\times 1/2 + 1/2, \times 1 + 1, \times 3/2 + 3/2$ ....

# #3 PERCENTAGE

Basic Concepts Starts Here : <u>Click Here</u>

## Q1.

If the income of Ram is 10% more than that of Shayam's income. How much % Shyam's income is less than that of Ram's income ?
**Method I.**
By using formula
less% = r/100+r ×100 = 10/100+10 × 100
= 10/110 ×100 = 9 1/11%
**Method II.**

Since 10% more $\left\{ \begin{array}{l} 100\% \\ 110\% \end{array} \right\}$ Two tools

Less% = $10 \times \dfrac{100}{110}$ .... (To decrease any number, we multiply with small number and divide with large number )

= $9\dfrac{1}{11}\%$

## Q2.

A man spends 40% on food, 20% on house rent, 12% on travel and 10% on education. After all these expenditure he saved Rs. 7200. Find the amount spent on travel ?

**Method I.**
Let total income x
total expenditure
= x × (40%+20%+12%+10%)
= x × 82%
Total saving = x - x × 82%
= x × 18%
Then x × 18% = 7200
x = 7200/18×100 = 40,000
Expenditure on travel = 12%
x × 12% = 40,000×12/100 = Rs. 4800

**Method II.**
Total income = 100% - represent total

Total Exp $\left\{ \begin{array}{l} 40\% - \text{Total} \\ 20\% - \text{House Rent} \\ 12\% - \text{Travel} \\ 10\% - \text{Education} \end{array} \right.$

100% -82% = 18% (saving)
Expenditure on Travel = 7200/18×12
= 4800

## Q3.

When numerator of a fraction is increased by 10% and denominator decreased by 20% the resultant fraction becomes 5/8. Find the original fraction ?

**Method I.**

Let the original fraction be x/y then -

$$\frac{x + \frac{x \times 10}{100}}{y - \frac{y \times 20}{100}} = \frac{5}{8}$$

$$\frac{\frac{x \times 110}{100}}{\frac{y \times 80}{100}} = \frac{5}{8}$$

$$\frac{x}{y} = \frac{5}{8} \times \frac{80}{110} = \frac{5}{11}$$

**Method II.**

Given Fraction = 5/8

Original fraction = 5/8×80/110

= 5/11 Ans.

## Q4.

If the length of a rectangle is increased by 20% and breath is decreased by 10%. Find the net% change in the area of that rectangle.

**Sol:**

net% change = x+y+ x×y/100

(+20)×(-10)/100

= +10-2

=8

Increase % = 8% Ans.

## Q5.

A reduction of 10% in the price of tea would enable and purchase to obtain 3 Kg. more for 2700 Rs. Find the reduced rate (new rate ) of tea ?

Sol :

10% 2700 = Rs. 270

Rs. 270 is the rate of 3 kg. of tea

1 kg of tea = Rs. 90/- kg,

# #4 PROFIT AND LOSS

Basic Concept Starts Here : Click Here

## Statement

A purchase an article at Rs 40 Rs. and sells it to B at rs. 50 and B sells its to C at Rs. 30



CP of A = Rs. 40
SP of A = Rs. 50

CP of B = Rs. 50
SP of B = Rs. 30
CP of C = Rs.30

**For A,** Profit = 50-40 = 10
**For B,** Loss = 50 -30 = 20

**For A,** P =SP-CP
**For B,** L= CP-SP

**For A,** Percent Profit = Profit of A/CP of A×100
**For B,** Percent loss = Loss of B/CP of B×100
**For A,** 10/40×100 = 25%
**For B,** 20/50×100 = 40%
P% = P/CP×100
L% = L/CP×100

## Q1.

A person purchased an article for Rs. 80 and sold it for Rs. 100.Find his % profit.
Sol:
CP of the article = Rs. 80
SP of the article = Rs. 100
Profit of the person = 100-80 = Rs. 20
% Profit of the person = Profit /CP×100
%P = 20/80×100
%P = 25%

**Trick:**
%P = 20/80×100 = 25%

## Q2.

A dishonest shopkeeper sells goods at his cost price but uses a weight of 900 gm for a kg. weight. Find his gain percent.

Sol:

The Cp of Shopkeeper = 900 gm

The Sp of Shopkeeper

= 1000 gm ( 1kg = 1000 gm )

The profit of shopkeeper

= 1000 -900 = 100 gm

% profit shopkeeper

= $^{\text{Profit of shopkeeper}}/_{\text{CP of shopkeeper}}$×100

%P = $^{100}/_{900}$×100 = $11^1/_9$%

## Q3.

A person got 5% loss by selling an article for Rs. 1045. At what price should the article be sold to earn 5% profit ?

Sol:

Trick :

New SP = 1045/95×105 = 1155

## Q4.

 A person sold an article at profit of 12%. If he had sold it Rs. 3.60 more, he would have gain 18%. What is the cost price ?

Sol:

Trick :

CP = 3.60/6×100 = Rs. 60

## Q5.

If the CP of 12 articles is equal to the SP of 9 articles. Find the gain or loss.

Sol : Let the CP of each article be Rs. 1

Then CP of 9 articles = Rs. 9

SP of 9 articles = Rs. 12

Gain % = $^3/_9$×100 = $33^1/_3$%

# # 5 SIMPLE AND COMPOUND INTEREST

Basic Concept Starts From Here : <u>Click Here</u>

## Q1.

At what rate of interest per annum will a sum double itself in 8 years ?
Sol:
Trick :

$$R = \left(\frac{N-1}{T}\right) \times 100$$

$$= \frac{2-1}{8} \times 100$$

$$= 12.5\%$$

## Q2.

A sum of money double itself at compound interest in 15 years. In how many years will it become eight times.
Trick :

$$n_2 = (n_1)^{\frac{t_2}{t_1}}$$

n = no. of times

t = number of years

$$8 = (2)^{\frac{t_2}{15}}$$

$$2^3 = (2)^{\frac{t_2}{15}}$$

$$\frac{t_2}{15} = \frac{3}{1}$$

$t_2$ = 45 years

# #6 RATIO AND PROPORTION

## Q1.

The ratio between the length and the breadth of a rectabgular field is 5:4 respectively. If the perimeter of that field is 360 meters. what is the breadth of that field in meters ?

Sol :

Perimeter = 2(5+4) = 18

Mean value of 18 = 360

Breadth = $\frac{360}{18} \times 4$ = 80 meters

## Q2.

A bag contains 50 P, 25 P and 10 P coins in the ratio 5:9:4 amounting to Rs. 206. Find the number of coins of each type.

Sol:

Let the number of 50P,25P and 10P coins be 5x,9x and 4x respectively

5x/2+9x/4+4x/10 = 206

50x + 45x + 8x = 4120

103x = 4120

x = 40

No. of 50 P coins = 5×40 = 200

No. of 25 P coins = 4×40 = 160

No. of 10 P coins = 9×40 = 360

## Q3.

A mixture contains alcohol and water in the ratio of 4:3. If 5 liters of water is added to the mixture the ratio becomes 4:5. Find the quantities of alcohol in the given mixture.

Sol:

Let the quantity of alcohal and water be 4x liters and 3x liters respectively.

$\frac{4x}{3x+5}$ = 4/5

8x =20

x = 2.5

## Q4.

A:B = 5:9 and B:C = 4:7 Find A:B:C.

Sol:

$$A : B = 5 : 9$$
$$B : C = 4 : 7$$
$$A:B:C = 20:36:63$$

# #7 TIME AND WORK

## Q1.

A and B together can complete a piece of work in 4 days. If A alone can complete the same work in 12 days, in how many days can B alone complete that work ?**(S.S.C.2003)**

Sol:



## Q2.

X and Y can do a piece of work in 20 days and 12 days respectively. X started the work alone and then after 4 days Y joined him till the completion of the work. How long did the work last ?

**(Bank PO,2004)**

Sol:

$$X \quad 20 \quad 3$$
$$\overset{60}{}$$
$$Y \quad 12 \quad 5$$

$$4 \times 3 = 12$$

$$60 - 12 = 48$$

$$\frac{48}{6} = 6$$

$$6 + 4 = 10 \text{ Ans}$$

## Q3.

A is thrice as good a workman as B and together is able to finish a job in 60 days less than B. Working together, they can do it in ?

Sol :

$$A \qquad\qquad 2$$

$$\qquad\qquad 12$$

$$B \quad 12 \qquad \dfrac{1}{3}$$

$$^{12}/_3 = 4$$

# #8 TIME, SPEED AND DISTANCE

## CONCEPTS

1) There is a relationship between speed, distance and time:

Speed = Distance / Time OR

Distance = Speed* Time

2) Average Speed = 2xy / x+y

where x km/hr is a speed for certain distance and y km/hr is a speed at for same distance covered.

**** Remember that average speed is not just an average of two speeds i.e. x+y/2. It is equal to 2xy / x+y

3) Always remember that during solving questions units must be same. Units can be km/hr, m/sec etc.

**** Conversion of km/ hr to m/ sec and m/ sec to km/ hr

x km/ hr = (x* 5/18) m/sec i.e. u just need to multiply 5/18

Similarly, x m/sec = (x*18/5) km/sec

4) As we know, Speed = Distance/ Time. Now, if in questions Distance is constant then speed will be inversely proportional to time i.e. if speed increases ,time taken will decrease and vice versa.

## TIME AND DISTANCE PROBLEMS

**Problem 1**: A man covers a distance of 600m in 2min 30sec. What will be the speed in km/hr?

**Solution**: Speed =Distance / Time
⇒ Distance covered = 600m, Time taken = 2min 30sec = 150sec
Therefore, Speed= 600 / 150 = 4 m/sec
⇒ 4m/sec = (4*18/5) km/hr = 14.4 km/ hr.

**Problem 2**: A boy travelling from his home to school at 25 km/hr and came back at 4 km/hr. If whole journey took 5 hours 48 min. Find the distance of home and school.

**Solution**: In this question, distance for both speed is constant.

⇒ Average speed = (2xy/ x+y) km/hr, where x and y are speeds

⇒ Average speed = (2*25*4)/ 25+4 =200/29 km/hr

Time = 5hours 48min= 29/5 hours

Now, Distance travelled = Average speed * Time

⇒ Distance Travelled = (200/29)*(29/5) = 40 km

Therefore distance of school from home = 40/2 = 20km.

**Problem 3**: Two men start from opposite ends A and B of a linear track respectively and meet at point 60m from A. If AB= 100m. What will be the ratio of speed of both men?

**Solution**: According to this question, time is constant. Therefore, speed is directly proportional to distance.

Speed∝Distance
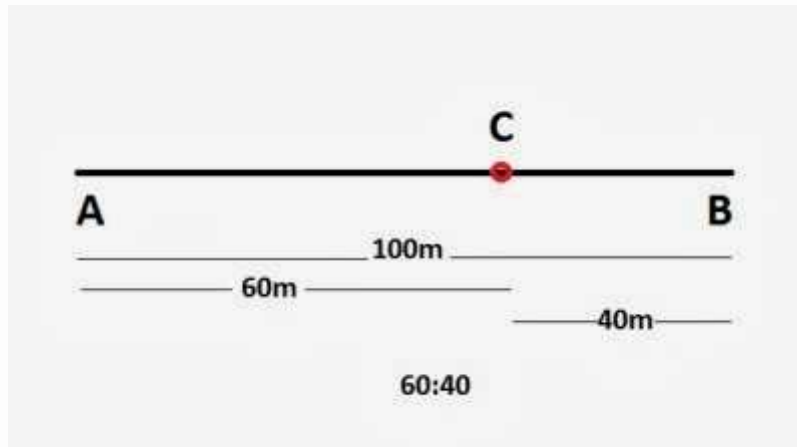


⇒ Ratio of distance covered by both men = 60:40 = 3:2

⇒ Therefore, Ratio of speeds of both men = 3:2

**Problem 4**: A car travels along four sides of a square at speeds of 200, 400, 600 and 800 km/hr. Find average speed.

**Solution**: Let x km be the side of square and y km/hr be average speed

Using basic formula, Time = Total Distance / Average Speed

x/200 + x/400 + x/600 + x/800 = 4x/y ⇒ 25x/ 2400 = 4x/ y⇒ y= 384

⇒ Average speed = 384 km/hr