Aptitude

① Percentage:

Lession - 1

Introduction:

Nrml Method

① 50 % of 2800 = ?

$\frac{50}{100} \times 2800$

$= 50 \times 28 = \boxed{1400}$

② 10 %

10 % of 2800 = ?

$\frac{10}{100} \times 2800 = ?$

$= \boxed{280}$

③ 30 % 2800 = ?

$\frac{30}{100} \times 2800$

$= 28 \times 30$

$= \boxed{840}$

Mind Calculation

① 50 % = 1400

② 10 % = $280^{\times 3} = \boxed{840} \Rightarrow 30\%$

③ 5 % = 140

④ 1 % = 28

⑤ 20 % = $280 \times 2 = \boxed{560}$

$\boxed{35\ \%}$

⇓

30 % + 5 %

⇓ ⇓

840 + 140 = $\boxed{980}$

$\boxed{x\ \%\ \text{of}\ y = y\ \%\ \text{of}\ x}$

E.g: 36 % of 50 = ?

x % of y = 50 % of 36

$= \boxed{18}$ //

Lession - 2

Basic Questions:

1. If 50 % of P = 25 % of Q, then P = x % of Q. find x.

a) 0.5

b) 20

c) 50

d) 30

e) 10

If $\frac{50}{2}\%$ of P = 25 % of Q

2P = Q

$\boxed{P = \frac{Q}{2}}$

P = x % of Q

find x

$\frac{Q}{2} = \frac{x}{100} \times Q$

50

$\boxed{x = 50}$ //

2. If 20% of (P+Q) = 50% of (P-Q), then find P:Q

a) 7:8
b) 7:3
c) 7:5
d) 5:7
e) 1:5

20% of $(P+Q) = 50\%$ of $(P-Q)$

$2(P+Q) = 5(P-Q)$

$2P+2Q = 5P-5Q$

$2Q+5Q = 5P-2P$

$7Q = 3P$

$\frac{7}{3} = \frac{P}{Q}$

P : Q
7 : 3 //

3. If 90% of A = 30% of B and B = 2x% of A, then the value of x is

a) 450
b) 400
c) 300
d) 150
e) 105

$\frac{90}{3}\%$ of A $= \frac{30}{1}\%$ of B

$3A = B$

$A = \frac{B}{3}$

$B = 2x\%$ of A

$B = \frac{2x}{100} \times \frac{B}{3}$

$x = 150$ //

4. If 40% of (A+B) = 60% of (A-B) then (2A-3B)/(A+B) is

a) 7/6
b) 6/7
c) 5/6
d) 6/5
e) 1/5

$\frac{40}{2}\%$ of $(A+B) = \frac{60}{3}\%$ of $(A-B)$ then

$2(A+B) = 3(A-B)$

$2A+2B = 3A-3B$

$2B+3B = 3A-2A$

$5B = A$

$\Rightarrow \frac{2A-3B}{A+B}$ is

$\Rightarrow \frac{2(5B)-3B}{5B+B} \Rightarrow \frac{10B-3B}{6B}$

$\Rightarrow \frac{7B}{6B} \Rightarrow 7/6$ //

5. If 20% of a is equal to 80% of b, then (b+a)/(b-a) is equal to

a) 3/5
b) 5/3
c) 5/7
d) 7/5
e) 1/5

$\frac{20}{4}\%$ of $a = \frac{80}{4}\%$ of b then $(b+a)/(b-a)$ is

$a = 4b$

$\frac{b+a}{b-a} = ?$

$\frac{b+4b}{b-4b} = \frac{5b}{-3b}$

$= -5/3$ //

6. If 20% of (A+B) = 50% of B, then the value (2A-B)/(2A+B) is

a) 1/2
b) 1/3
c) 1/4
d) 1
e) 1/5

20% of $(A+B) = 50\%$ of B

$2A+2B = 5B$

$2A = 5B-2B$

$2A = 3B$

$A = \frac{3B}{2}$

$\left(\frac{2A-B}{2A+B}\right)$

$= \frac{2\left[\frac{3B}{2}\right]-B}{2\left[\frac{3B}{2}\right]+B}$

$= \frac{2B}{4B}$

$= 1/2$ //

7. If x is 20% less than y, then find the value of $(y-x)/y$ and $x/(x-y)$

a) 1/5, -4
b) 5, -1/4
c) 2/5, -5/2
d) 3/5, -5/3
e) 2/5, -3/4

x is 20% less than Y

X (80) Y (100)

$\left(\frac{Y-X}{Y}\right)$

$\Rightarrow \frac{100-80}{100}$

$\Rightarrow \frac{20}{100}$

$\Rightarrow \boxed{1/5}$

$\left(\frac{X}{X-Y}\right)$

$\Rightarrow \frac{80}{80-100}$

$\Rightarrow \frac{80}{-20}$

$\Rightarrow \boxed{-4}$ //

8. If 8% of x = 4% of y, then 20% of x is

a) 10% of y
b) 16% of y
c) 40% of y
d) 80% of y
e) 30% of y

$\frac{8}{2}$% of x = 4% of y, Then 20% of x

$2x = 1y$

$\boxed{2x = y}$

20% of x

$\frac{10}{20}$% of $\frac{y}{2}$

10% of y

$\frac{8}{2}$% of x = 4% of y

$\frac{2}{\times 10}$% of x = $\frac{1}{\times 10}$% of y

20% of x = 10% of y

9. If 60% of A = 30% of B, B = 40% of C, C = x% of A, then the value of x is

a) 200
b) 500
c) 800
d) 300
e) 100

$\frac{60}{2}$% of A = 30% of B

$\boxed{2A = B}$

$2A = \frac{40}{100} \times C$

$\boxed{A = \frac{C}{5}}$

B = 40% of C

$\boxed{C = x\%\ \text{of}\ A}$

C = x% of A

$C = \frac{x}{100} \times \frac{C}{5}$

$\boxed{x = 500}$ //

Lession - 3

What Percentage :

Formula 1 :

x is what % of y $= \frac{x}{y} \times 100$

what % of x is y $= \frac{y}{x} \times 100$

Formula 2 :

x is what % more or less than y $= \frac{(x-y)}{(y)} \times 100$

Ans = +	-
more	less

1. If x is 10% more than y, then by what percent is y less than x?

a) 9(1/11)%
b) 7(1/11)%
c) 8(1/11)%
d) 10(1/11)%
e) 12(1/11)%

x	y
110	100

$= \frac{100}{11}$

$\Rightarrow 11\overline{)100}\ (9$, remainder 1

$= 9\frac{1}{11}$

$= \frac{y-x}{x} \times 100$

$= \frac{100-110}{110} \times 100$

$= \frac{-10}{11} \times 10 = \frac{-100}{11}$

2. If A's height is 10% more than B's height by how much percent less is B's height that that of A?

a) 10%
b) 10(1/9)%
c) 10(1/11)%
d) 9(1/11)%
e) 15%

A	B
110	100

that/of

$= \frac{100}{11}$

$= 9\frac{1}{11}$

$\frac{B-A}{A} \times 100$

$= \frac{100-110}{110} \times 100 = \frac{-10}{110} \times 100$

$= -\frac{100}{11}$

3. B got 20% marks less than A. What percent marks did A got more than B?

a) 20%
b) 25%
c) 12%
d) 80%
e) 90%

A	B
100	80

$= \frac{A-B}{B} \times 100$

$= \frac{100-80}{80} \times 100$

$= \frac{20}{80} \times \frac{25}{100} = 25\%$

4. If x earns 25% more than y. what percent less does y earn than x?

a) 16%
b) 10%
c) 20%
d) 25%
e) 11%

x	y
125	100

$= \frac{y-x}{x} \times 100$

$= \frac{100-125}{125} \times 100$

$= \frac{25}{125} \times \frac{20}{100} = 20\%$

5. Two numbers are respectively 12(1/2) % and 25% more than a third number. The first number is what percentage of second number is

a) 50
b) 60
c) 75
d) 90
e) 25

12(1/2) = 12.5

112.5	125	100
12(1/2)%	25%	?

$= \frac{112.5}{125} \times 100 = \frac{11250}{125}$

$= \boxed{90}$ //

90.0
125 | 11250.0
1125

6. Two numbers are less than a third number by 30% and 37% respectly. The percent by which the second number is less than the first is

a) 10
b) 7
c) 4
d) 3
e) 2

70	63	100
30%	37%	?

$= \frac{63-70}{70} \times 100$

$= \frac{-7}{70} \times 100$

$= \boxed{10\%}$ //

Lession # 4

Based on Salary :

Base value : 100% (or 100) => salary

1. Radha spends 40% of her salary of food, 20% on house rent, 10% on entertainment and 10% on conveyance. If her savings at the end of a month are Rs. 1500, then her salary per month (in Rs.) is

100% - 40% - 20% - 10% - 10%
(spend)

100% - 80%

20% = 1500

100% = x

$20x = 1500 \times 100 \Rightarrow \boxed{x = 7500}$ //

② Mr. X spends 35% of his salary on food 5% of his salary on children education. In January 20xx he spend Rs. 17600 on these two items. His salary for that month is.

35% + 5%

40% = 17600

100% = x

$40x = 17600 \times 100$

$x = \frac{17600 \times 100}{40}$

$x = 44000$ //.

3. Mr. X spends 20% of his monthly income on household expenditure. Out of the remaining 25% he spend on children's education, 15% on transport, 15% on medicine and 10% on entertainment. He is left with Rs. 9800 after incurring all these expenditures. What is his monthly income?

(-%) Out of remaining

28% = 9800

100% = x

$x = \frac{9800 \times 100}{28}$

$x = 1400 \times 25$

$x = 35000$ //.

Rs

100

↳ 20% of 100 = (20) H T

Rs (80)

25 + 15 + 15 + 10

65%

$80 \times \frac{65}{100} = 52$

4. A man spends 40% of his monthly salary on food and one-third of the remaining on transport. If he saves Rs. 4500 per month, which is equal to half the balance after spending on food and transport, his monthly salary is

100

↳ 40% of 100 = 40

60

↳ $60 \times \frac{1}{3}$

40 = Remaing

20% = 4500

100% = x

$x = \frac{4500 \times 100}{20}$

$x = 22500$ //.

Lesson # 5

Based on Votes :

① DMK got 5000 votes and won the election

② ADMK won the election by a majority of 5000 votes.

* Note :

→ Majority

→ By

W ~ L %

↓

Majority

Total votes :

100%.

1. Two person contested an election of Parliament. The winning candidate secured 57% of the total votes polled and won by a majority of 42000. The total number of votes polled is.

T	W	L
100%	57%	43%

57% ~ 43%

14% = 42000

100% = x

100% = x

$14x = 42000 \times 100$

$x = 300000$ //.

2. In a election, a candidate secured 40% of the votes but is defeated by the only other candidate by a majority of 298 votes. Find the total number of votes recorded.

I	W	L
100%	60%	40%

60% ~ 40% = 20%

20% = 298

100% = x

$x = \frac{298 \times 100}{20}$

$\boxed{x = 1490}$ //

3. In a election between two candidates, one got 72% of the total votes. If the total votes are 8200 by how many votes did the winner win the election?

(X) by

I	W	L
100%	72%	28%

100% = 8200

44% = x

$x = \frac{8200 \times 44}{100}$

$x = 82 \times 44$

$\Rightarrow \boxed{x = 3608}$ //

4. In an assembly election, a candidate got 55% of the total valid votes. ~~55% of the total valid votes~~ 2% of the total votes were declared invalid. If the total number of voters is 104000, then the number of valid votes polled in favour of the candidate.

100% - 2% = 98%

55% of 98

$\frac{55}{100} \times 98$

$= \boxed{53.9}$

$\boxed{53.9\%}$

winner

539 × (100+4)

53900

2156

56056

100% = 104000

53.9% = x

$x = 539 \times 104$

$\boxed{x = 56056}$

Lesson #6

Based on Marks:

1. In an examination, there were 1000 boys and 800 girls. 60% of the boys and 50% of the girls passed. Find the percent of the candidates failed?

1000 (Boys) 800 (girls)

40% 50%

↓

400 (Boys) + 400 (girls) = 800

$$\frac{800}{1800} \times 100 = \frac{400}{9} = 44.44\%$$

2. In an examination, a candidate must secure 40% marks to pass. A candidate, who gets 220 marks, fails by 20 marks. What are the maximum marks for the examination?

40% 220 20

↓

40% = 240

100% = x

$$x = \frac{240 \times 100}{40}$$

$$\boxed{x = 600}$$

3. For an examination, it is required to get 36% of maximum marks to pass. A student got 113 marks and failed by 85 marks. The maximum marks for the examination are:

36% 113 + 85 = 198

36% = 198

100% = x

$$x = \frac{198 \times 100}{36} \Rightarrow \boxed{x = 550}$$

4. In an examination 70% of the candidates passed in English, 80% passed in Mathematics, 10% failed in both the subjects. If 144 candidates passed in both, the total number of candidates were:

70% (Eng) 80% (M) (x%) ↓ 144 10% (Fail)

$100\% = 70\% + 80\% + 10\% - x\%$

$100\% = 160\% - x$

$x = 60\%$

$60\% = 144$

$100\% = n$

$\boxed{n = 240}$ //