PERCENTAGES

In your exam there are total marks of 150

You got 84

84 is what part of 150

84=x\*150

X=84/150=14/25

14/25 \*100=56%

a,b

a is what % of b means

a=x% of b

a=(x/100)\*b

conversion of fraction into percentage

if we multiply a fraction with 100 , we get equivalent percentage

if we divide percentage with 100 , then we get equivalent fraction

|  |  |  |
| --- | --- | --- |
| Fraction | percentage | |
| 1 | 100 | |
| 1/2 | 50 | |
| 1 / 3 | 33.33 | |
| 1 /4 | 25 | |
| 1/5 | 20 | |
| 1/6 | 16.67 | |
| 1/7 | 14.2857 | |
| 1/8 | | 12.5 | |
| 1/9 | | 11.11 | |
| 1/10 | | 10 | |
| 1/11 | | 9.09 | |
| 1/12 | | 8.33 | |
| 1/14 | | 7.1 | |
| 1/15 | | 6.67 | |
| 1/16 | | 6.25 | |
| 1/20 | | 5 | |
| 1/25 | | 4 | |

If a is increased by x% then we write =a(1+x/100)

a+x% of a=a(1+x%)=a(1+x/100)

if a is decreased by x% then we write =a(1-x/100)

a-x% of a =a(1-x%)=a(1-x/100)

sides of rectangle

length and breadth

if we have two things a and b , one is a% increase and another is b% increase then net change =a+b+ab/100

|  |  |  |
| --- | --- | --- |
| a | b | Net change |
| increases | increases | a+b+ab/100 |
| increases | decreases | a-b-ab/100 |
| decreases | increases | -a+b-ab/100 |
| decreases | decreases | -a-b+ab/100 |

If there is no net change ,a+b+ab/100 =0

If price of sugar is increased by 10% then by what % the person should reduce his consumption so that there is no change in amount spent

10-b-10b/100=0

10=b+b/10

10=11b/10

b=100/11%

If a is increasing , by how much should b decrease so that there wont be any change

a-b-ab/100=0

if a is increasing , by how much should b decrease so that he may accept 10% change

a-b-ab/100=10%

concept of elections

case-1

total voters =100%

in valid votes are / persons not voted 10%

valid votes =100% -10% =90%

And defeat B by 10%

A+B=90%

A-B=10%

2A=100%

A=50%

B=40%

Case-2 :-

Total votes =100%

No of persons who do not vote =10%

No of persons voted =100% -10% =90%

Invalid votes =20%

Valid votes =90% -20% of 90% =90% -(20/100)\*(90/100) =72 %

A got 40 % votes

B get 32 % of votes

1)If 20% of a = b, then b% of 20 is the same as

(20/100)\*a=b

b=a/5

b% of 20=(a/500)\*20=a/25=(a/25)\*100=4% of a

2 ) A student multiplied a number by 3/5

instead of 5/3. What is the percentage error

in the calculation?

Let number =30

30\*3/5=18

30\*5/3=50

Error=50-18=32

Error % =32/50 \*100=64%

3) In a certain school, 20% of students are below 8 years of age. The number of students above 8 years of age is 2/3 of the number of students of 8 years of age which is 48. What is the total number of students in the school?

No of students below 8 years =20%

No of students 8 years and above 8 years =80%

No of students who are exactly 8 years =48

No of students above 8 years =2/3 \* 48 =32

No of students 8 and above 8 years =80

80 students as 80%

Total students =100% =100

4 ) Two numbers A and B are such that the

sum of 5% of A and 4% of B is two-third of

the sum of 6% of A and 8% of B. Find the

ratio of A : B.

5a/100 +4b/100=(2/3)\*(6a/100 +8b/100)

5a+4b =(2/3)\*(6a+8b)

3(5a+4b)=2(6a+8b)

15a+12b =12a+16b

15a-12a=16b-12b

3a=4b

a/b =4/3

5) In an election between two candidates, one

got 55% of the total valid votes, 20% of the

votes were invalid. If the total number of

votes was 7500, the number of valid votes that

the other candidate got, was

total votes =100%

invalid votes =20%

valid votes =80%

total no of votes =7500

100% -7500

80%-7500\*80/100=75\*80=6000

A,B

A=55% of valid votes =55% of 80% =44%

B =80% -44% =36%

80% -6000

36% =6000\*36/80=600\*36/8=75\*36=2700

6 ) Three candidates contested an election

and received 1136, 7636 and 11628 votes

respectively. What percentage of the total

votes did the winning candidate get?

Total votes = 1136

7636

11628

20400

11628=(x/100)=20400

11628=204x

X=11628/204=1938/34=969/17 =57%

7) Two tailors X and Y are paid a total of Rs.

550 per week by their employer. If X is paid

120 percent of the sum paid to Y, how much

is Y paid per week?

X+y=550

X=1.2y

1.2y +y=550

2.2y=550

22y/10=550

y/10=25

y=250

8 ) Gauri went to the stationers and bought

things worth Rs. 25, out of which 30 paisa

went on sales tax on taxable purchases. If

the tax rate was 6%, then what was the cost

of the tax free items?

Amount paid for tax free items =25-(5+0.30)=19.70

Let amount paid on taxable items =x

Tax rate=6%

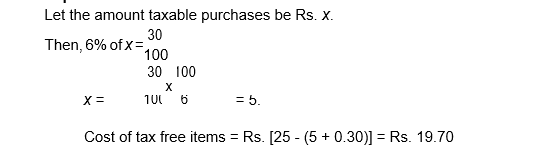
6% of x=30/100

6x/100=30/100

6x=30

X=5

Amount paid on non taxable items =25-5-0.30=19.70



9) Rajeev buys good worth Rs. 6650. He gets a

rebate of 6% on it. After getting the rebate, he

pays sales tax @ 10%. Find the amount he will

have to pay for the goods.

6650-(6% of 6650 + (10% of 6% of 6650)

=6650-(6\*6650/100)+(6\*6650/1000)

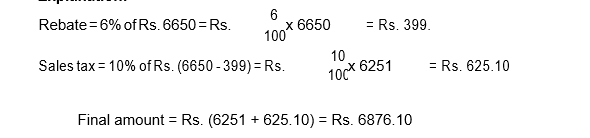
=6650-3990/10+3990/100

=6650-399+39.9

=6876.10

6650\*(1-6/100)=6650\*94/100=6251

6251(1+10/100)=6251\*11/10=6876



1 0) The population of a town increased from

1,75,000 to 2,62,500 in a decade. The

average percent increase of population per

year is

change in population =262500-175000=87500

change in population for one year =8750

11) A batsman scored 110 runs which

included 3 boundaries and 8 sixes. What

percent of his total score did he make by

running between the wickets?

12) Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks

obtained by them are:

a,b

a=b+9

b+9=(56/100)(a+b)

b+9=14/25 \*(a+b)

25b+225 =14a+14b

11b+225 =14a

11b+225 =14b+126

3b=99

B=33

A=42

13) A fruit seller had some apples. He sells

40% apples and still has 420 apples . find original number of apples

Let original apples =100%

He sold 40%

100% -40% =60%

60% -------420

100% ------420\*100/60=700

1 4) What percentages of numbers from 1 to 70 have 1 or 9 in the unit's digit?

1,9,11,19,21,29,31,39,41,49,51,59,61,69

14 numbers

14/70 \*100=20%

15) If A = x% of y and B = y% of x, then which of the following is true?

A. A is smaller than B.

B. A is greater than B

C. Relationship cannot be determined.

D. If x is smaller than y, then A is greater than B.

A=xy/100

B=xy/100

A=B

16) Salary of Sai was Rs. 20000. If the salary is decreased by 10 percent and then increased by 30 percent, what is the new salary of Sai?

100% -----10% decrease =100% -10%of 100% =90%

90%---30% increase=90% +30% of 90% =117%

Resultant change =117% -100% =17%

100% -20000

117% -20000\*117/100=200\*117=23400

17) Salary of Shradha is Rs. 30000. It is increased by 10%, then decreased by 20% and again increased by 30%. What is her final salary?

100% ---10% increase =110%

110% ---20% decrease =110% -20% of 110% =88%

88% -----30% increase =88% +30% of 88% =114.4%

100% =30000

114.4 % =30000\*114.4/100=300\*114.4 =34320

18) In an examination a student scored 30 % marks from I paper out and he is failed by 15 marks and another student who scored 40 % mark and he obtained 35 mark more than pass mark.Find pass mark?

Let maximum marks =x

30x/100 +15 = 40x/100 -35

10x/100=50

X=500

30x/100 +15 =30(500)/100 +15 =165

1 -100%

½ -50%

1/3 -33.33%

¼ -25%

1/5 -20%

1/6 -16.67%

1/7 -14.28%

1/8 -12.5%

1/9 -11.11%

1/10=10%

1/11 -9.09%

1/12 =8.33%

1/13 – 7.7%

1/14 – 7.1%

1/15 -6.675

1/16 – 6.25 %

1/20 -5%

1/25 -4%

1/30- 3.33%

1/40 -2.5%

1/50 - 2%

1. If 25% of number is subtracted from second number , the number is reduced to its 5/6th . find ratio of first number to second number.

X,y

y- x/4 =5y/6

y/6 =x/4

x/y =2/3

1. Difference between two numbers is 2125 . if 42.85% of one number is equal to 83.33 % of other number . find sum of two number

A , b

a-b 2125

3a/7 =5b/6

18a =35b

B =18a/35

A – 18a/35 =2125

17a /35 = 2125

A= 125\*35

B =18(125\*35)/35 =18 \*125

A+ b = 6625

3 ) In an examination in which full marks were 500. A get 10% less than B . B get 25 % more than C . C get 20% less than D . if A got 360 marks . what % of full marks was obtained by D.

Maximum marks =500

A =9B/10

B =5C/4

C = 4D/5

A=360

B =400

C =4\*400/5 =320

D =5C /4 =5\* 320 /4 =400

400 =x% of 500

X= 80

4)person increases his consumption of sugar by 42.84% because the price of sugar is reduced by x% . find x so that expenditure remains constant.

A + B + AB/100=net change

A +B+AB/100 =0

A – B – AB/100=0

3/7 -x-3x/7 =0

3/7 =10x/7

3=10x

X= 3/10

X = 30%

5)Due to price hike of 20% , 4KG less sugar is available for rs. 120 what is initial price per kg of sugar

Initial final

Price 100 120 5:6

Consumption 120 100 6:5

Consumption difference = 1 unit

According to question 1 unit =4 kg

Initial consumption = 6 units =24 kg

Final consumption = 5 units =20 kg

Total amount =120

Initial consumption =24 kg

Initial price per kg= 120/24= 5 rs

Final price per kg =120/20 =6 rs

6Price of petrol is increased from rs. 60 to 75.

how much should the consumption of petrol be reduced so as to increase the expenditure by only 10%

percentage increase in price = 75-60 /60 =25 %

a+b +ab/100 =10/100

25 /100 -x -25x/100 =10/100

15/100 =125x/100

15 =125x

X= 3/25

X= 12 %

7)The price of sugar is increased by 24% . A person wants to increase his expenditure by 15 % . By what % should he reduce his consumption.

24/100 -x/100 -24x/100 =15/100

9/100 =25x/100

9=25x

X=9/25 =36 %

8) A person saves 20 % on food . of the remaining amount he spends 25 % on education , now what remains he is left , he spends 10 % on clothes and rest he saves . If his savings are Rs. 2700 then find his income.

Assume income =100 %

Food =20 %

Remaining = 80 %

Education =25 % of 80 % =20 %

Remaining =60 %

Clothes = 10 % 0f 60 % = 6%

Remaining =54 %

Savings =54 %

54 % =2700

100 % =5000

Topics covered in first cycle

Number system

Quantitative aptitude by RS Agarwal

Quicker maths by m tyra

Verbal and non verbal reasoning by RS Agarwal

Quants by arun sharma

Practice :- indiabix

Prep insta

Conduira online

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