

# RBI PHASE 1 RECAP

16th JULY '18

QUANT - PERCENTAGE

# PERCENTAGE



A percentage is defined as a number represented as a fraction of 100.. It is used to compare things and use it in ratios. It is denoted by the symbol %.

For ex. 30 out of 150 is  $(30/150) \times 100 = 20\%$

75% really means  $75/100$  And 100% is  $100/100$ , or exactly 1 (100% of any number is just the number, unchanged) And 200% is  $200/100$ , or exactly 2 (200% of any number is twice the number)

## FORMULA FOR CALCULATING PERCENTAGES

The formula for calculating percentages or for converting from percentages are relatively simple.

To convert a fraction or decimal to a percentage, multiply by 100:  $1/5 \times 100 = 20\%$

To convert a percentage to a fraction, divide by 100 and reduce the fraction (if possible):  $60\% = 60/100 = 3/5$

## INVERSE RELATION

**$X\%$  of  $Y = Y\%$  of  $X$**

**For EX. 8% of 50 is the same as 50% of 8**

**And 50% of 8 is 4**

**So 8% of 50 is also 4.**

## PERCENTAGE IN THE DECIMAL FORM

**percentage can also be represented as decimal fractions. In such a case it is effectively equivalent to proportion of the original value.**

**For ex. 20% is the same as  $20/100 = 0.2$**

**The percent equivalent of a decimal can be obtained by moving the decimal point two places to the right and adding the percent sign.**

**For ex.  $0.356 = 0.356 \times 100\% = 35.6\%$**

## PERCENTAGE INCREASE OR DECREASE

Percentage increase or decrease of a quantity is the ratio expressed in percentage of the actual increase or decrease of the quantity to the original amount of the quantity, i.e.,

Percentage increase:

$\text{Actual increase} / \text{original increase} \times 100$

Percentage decrease:

$\text{Actual decrease} / \text{original quantity} \times 100$

## RATIO AS PERCENTAGE

Ratio between any two quantities can also be expressed as percentage.

For ex. If the ratio of A and B is 3:2, we can say the ratio of A: B is 60% : 40%.

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**Q.1) The price of raw materials has gone up by 15%, labor cost has also increased from 25% of the cost of raw material to 30% of the cost of raw material. By how much percentage should there be a reduction in the usage of raw materials so as to keep the cost same?**

- [a] 17% approx.**
- [b] 24% approx.**
- [c] 28% approx.**
- [d] 25% approx.**

## **Solution (a)**

**Let the initial price of raw materials be 100. The new cost of the same raw material would be 115.**

**The initial cost of the labor would be 25 and the new cost would be 30% of 115 = 34.5**

**The total cost initially would be RS. 125**

**The total cost for the same usage of raw material would now be:  $115+34.5 = 149.5$**

**This cost has to be reduced to 125. The percentage reduction will be given by  $(24.5/ 149.5) \times 100 = 17\%$  approx.**

**Q.2) In the Mock CAT paper at Mindworkzz, questions were asked in five sections. Out of the total students, 5% candidates cleared the cut off in all the sections and 5% cleared none. Of the rest, 25% cleared only one section and 20% cleared four sections. If 24.5% of the entire candidates cleared two sections and 300 candidates cleared three sections, find out how many candidates appeared at the Mock CAT at Mindworkzz?**

- [a] 1000**
- [b] 1200**
- [c] 1500**
- [d] 2000**

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## Solution 2 (b)

The following structure would follow:

Passed all = 5%

Passed none = 5%

Remaining = 90%

Passed one = 25% of 90% = 22.5%

Passed four = 20% of 90% = 18%

Passed two = 24.5%

Passed three = rest

Which is  $(100 - (5+5+22.5+18+24.5)) = 25\%$

It is given that 300 students passed three sections.

If  $25\% = 300$

$100\% = 300 \times 100 / 25 = 1200$

Hence, 1200 students must have appeared at the test.

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**Q.3) A shopkeeper announces a discount scheme as follows: for every purchase of RS. 3000 to RS. 6000, the customer gets a 15% discount or a ticket that entitles him to get a 7% discount on a further purchase of foods costing more than RS. 6000. The customer, however would have the option of reselling his right to the shopkeeper at 4% of his initial purchase value (as per the right refers to the 7% discount tickets). In an enthusiastic response to the scheme, 10 people purchase goods worth RS. 4000 each. Find the maximum possible revenue for the shopkeeper.**

- [a] RS. 38,400**
- [b] RS. 38,000**
- [c] RS. 39,400**
- [d] RS. 39,000**

### **Solution (a)**

**The shopkeeper would get the maximum revenue when everybody opts for a 4% resale of the right. In such a case, the revenue for the shopkeeper from each customer would be 96% of 4000**

$$= 4000 - 160 = 3840$$

$$\text{Total revenue} = 10 \times 3840$$

$$= \text{RS. } 38,400$$

$$= 38,400$$



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**Q.4) The length and breadth of a rectangle are changed by +20% and -10%, respectively. If the area of the rectangle was 120 m earlier, what is the new area?**

- [a] 129.6 m**
- [b] 84.5 m**
- [c] 120.5 m**
- [d] 134.6 m**

**Solution (a)**

**Area= L x B**

**New area = 1.2 L x 0.9 B = 1.08 LB**

**Hence, the change in area is 8% increase**

**Old area = 120 m**

**New area = 120 + (8% of 120)**

**= 120 + (1.2 x 8)**

**= 120+ 9.6 = 129.6 m**

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**Q.5) Due to a 25% price hike in the price of rice, a person is able to purchase 20 kg less of rice for RS. 400. If after 10 days the customer would have to pay 2 RS. more per kg., how much % price hike would be there now?**

- [a] 25%**
- [b] 50%**
- [c] 55%**
- [d] 45%**

**Solution (b)**

**Let the price is 100 per kg**

**Increased by 25%= 125 RS. per kg**

**Consumption has to decreased by =  $25 / 125 \times 100 = 20\%$**

**There is actual reduction in the consumption by 20 kg**

**Thus, 20% decrease in consumption is equal to 20 kg drop in consumption**

**Hence, original consumption= 100 kg**

**Money spent being RS. 400, the original price of rice is RS. 4 per kg.**

**After 10 days he has to pay 2 RS. more**

**2 RS. is the 50% of 4 RS.**

**So, now 50% increase is there.**

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**Q.6) The cost of manufacture of an article is made up of four components A, B, C and D which have a ratio of 3: 4: 5: 6 respectively. If there are respective change in the cost of +10%, -20%, -30% and +40% and initial cost of the article is RS. 356, find the new cost of the article.**

- [a] RS. 363.90**
- [b] RS. 348.10**
- [c] RS. 356**
- [d] none of these**

**Solution (a)**

**Assume the cost components to be valued at 30, 40, 50 and 60 respectively.**

**New cost of components = 33, 32, 35 and 84 respectively**

**The original total cost was 180, the new one is 184**

**The percentage change is  $4/180 = 2.22\%$**

**The initial cost of the article = RS. 356**

**Increase in the cost of the article =  $2.22 \times 356/100 = \text{RS. } 7.90$**

**New cost =  $356+7.90 = \text{RS. } 363.90$**