

Vol 1 Lec 2

PERCENTAGE

Original
Value
New Value

Sheet
25
25
100

Percentage to Fraction (Divide by 100) (PFD)

$$25\% = \frac{25}{100} = \frac{1}{4}$$

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16 + (9/5)\% = 16 \frac{2}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3}$$

$$83 + (1/3)\% = 83 \frac{1}{3} = \frac{250}{3} = \frac{250}{3} = \frac{250}{3}$$

Fraction to Percentage (Multiply by 100) (PFM)

$$3/4 = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$2/7 = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$

1	14.28%
2	28.57%

1. A number is increased by 20%.

Original = 100%. Now find the new number
New = 120% of 100 → 120

$$20 \rightarrow \frac{20}{100} = \frac{1}{5} \text{ change (numerator)}$$

$$\text{original} = 5$$

2. A number decreases by 25%.

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{original} = 4$$

$$\text{Decreases} = 4 - 1 = 3$$

3. A number is increased by 25%, then it decreases 25%. The original number is

$$\text{New} = 100 + 25 = 125\% = 125$$

$$25 = \frac{1}{4} \rightarrow \text{New} = 125 - 31.25 = 93.75$$

Vol 1 Lec 2

PERCENTAGE

Converting
percentage
to
fraction
or
vice

Percentage	Number
25	50
25	100

Percentage to fraction (Divide by 100) (PED)

$$25\% = \frac{25}{100} = \frac{1}{4}$$

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16\frac{2}{3}\% = \frac{16\frac{2}{3}}{100} = \frac{50}{3} = \frac{50}{300} = \frac{5}{30}$$

$$83\frac{1}{3}\% = \frac{83\frac{1}{3}}{100} = \frac{250}{300} = \frac{5}{6}$$

fraction to percentage (Multiply by 100) (PEM)

$$\frac{3}{4} = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$\frac{2}{7} = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$

1	14.28%
2	28.57%
3	

1. A number is increased by 20%.

original = 100% man find the new number
100% New = 120% of 100 → 120

$$100 \rightarrow \frac{100}{100} = \frac{1}{1} \text{ change (numerator)}$$

$$\text{original} = 5$$

2. A number decreases by 25%

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{new} = 1$$

$$\text{Decreases} = 1 - 1 = 0$$

3. A number is increased by 25%, then it decreases 25%. The original number is

$$\text{New} = 100 + 25 = 125\% = 1.25$$

$$\frac{25}{100} = \frac{1}{4} \rightarrow \text{New} = 1 - 1 = 0$$

Vid Lec 2

PERCENTAGE

Comparison
of
value

25
100

Percentage to Fraction (Divide by 100) (PED)

$$25\% = \frac{25}{100} = \frac{1}{4}$$

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16 + (2/3)\% = 16 \frac{2}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3}$$

$$83 + (1/3)\% = 83 \frac{1}{3} = \frac{250}{3} = \frac{250}{3} = \frac{250}{3}$$

Fraction to Percentage (Multiply by 100) (PEM)

$$3/4 = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$2/7 = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$



$$\frac{1}{7} = 14.28\%$$

$$\frac{2}{7} = 28.57\%$$

1. A number is increased by 20%

original = 100% new find the new number
100% New = 120% of 100 → 120

$$20 \rightarrow \frac{20}{100} = \frac{1}{5} \text{ change (numerator)} \\ \text{original} = 5 \text{ new} = 5 + 1 = 6 \text{ div}$$

2. A number decreases by 25%

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{original} = 4 \\ \text{new} = 4 - 1 = 3$$

$$\text{Decreases} = 4 - 1 = 3$$

3. A number is increased by 25%, then it becomes 600. The original number is

$$\text{New} = 100 + 25 = 125\% = 600$$

$$\frac{25}{100} = \frac{1}{4} \text{ New} = 4 + 1 = 5$$

Vid Lec 2

PERCENTAGE

Comparison
exactly
same
type

sheela	Mumtaz
25	50
25	100

Percentage to fraction (Divide by 100) (PED)

$$25\% = \frac{25}{100} = \frac{1}{4}$$

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16 + (2/3)\% = 16 \frac{2}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3}$$

$$83 + (1/3)\% = 83 \frac{1}{3} = \frac{249}{3} = \frac{250}{3} = \frac{250}{3}$$

fraction to percentage (multiply by 100) (PEM)

$$3/4 = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$2/7 = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$



1	14.28%
2	28.57%

1. A number is increased by 20%.

original = 100%. now find the new number
New = 120% of 100 → In percentage

$$100 \rightarrow \frac{120}{100} = \frac{12}{10} = \frac{6}{5} \text{ change (Numerator)}$$

$$\text{original} = 5$$

2. A number decreases by 25%

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{original} = 1$$

$$\text{Decreases} = 1 - 1 = 0$$

3. A number is increased by 25%, then it becomes 600. The original number is

$$\text{New} = 100 + 25 = 125\%$$

$$\frac{25}{100} = \frac{1}{4} \rightarrow \text{New} = 4 + 1 = 5$$

Vid 1.1.2

PERCENTAGE

original
existing
new

25
25

50
100

percentage to fraction divide by 100 (PED)

$$0.5\% = \frac{25}{100} = \frac{1}{4}$$

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16 + (2/3)\% = 16 \frac{2}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3} = \frac{50}{3}$$

$$83 + (1/3)\% = 83 \frac{1}{3} = \frac{250}{3} = \frac{250}{3} = \frac{250}{3} = \frac{250}{3}$$

fraction to percentage (multiply by 100) (PED)

$$3/4 = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$2/7 = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$

$$\frac{1}{7} = 14.28\% \\ \frac{2}{7} = 28.57\%$$

1. A number is increased by 20%.

original = 100%. new find the new number
100% new = 120% of 100 → 120

$$20 \rightarrow \frac{20}{100} = \frac{1}{5} \text{ change (numerator)} \\ \text{original} = 5 \text{ original (denominator)}$$

$$\text{new} = 5 + 1 = 6 \text{ div}$$

2. A number decreases by 25%.

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{original} = 1 \\ \text{original} = 4$$

$$\text{Decreases} = 4 - 1 = 3 \text{ div}$$

3. A number is increased by 25%, then it decreases by 25%. The original number is

$$\text{new} = 100 + 25 = 125\% = 1.25 \\ \text{original} = 125 \div 1.25 = 100$$

$$25 = \frac{1}{4} \text{ new} = 4 + 1 = 5$$

PERCENTAGE

$$\frac{25}{100} = \frac{50}{100}$$

Percentage to Fraction Convert by 100 (PED)

$$60\% = \frac{60}{100} = \frac{3}{5}$$

$$16 + (9/3)\% = 16 \frac{2}{3} = \frac{50}{3} = \frac{50}{3} \times \frac{1}{100} = \frac{50}{300} = \frac{1}{6}$$

$$83 + (1/3)\% = 83 \frac{1}{3} = \frac{250}{3} = \frac{250}{3} \times \frac{1}{100} = \frac{25}{30} = \frac{5}{6}$$

Fraction to Percentage (Multiply by 100) (FPM)

$$3/4 = \frac{3}{4} \times 100 = \frac{300}{4} = 75\%$$

$$2/7 = \frac{2}{7} \times 100 = \frac{200}{7} = 28.57\%$$

$$\frac{1}{7} = 14.28\%$$

1. A number is increased by 20%.

original = 100% now find the new number

$$100\% \text{ New} = 120\% \text{ of } 100 \rightarrow \text{In fraction}$$

$$20 \rightarrow \frac{20}{100} = \frac{1}{5} \text{ change (Numerator)}$$

$$\text{original} = 5$$

2. A number decreases by 25%

$$25 \rightarrow \frac{25}{100} = \frac{1}{4}$$

$$\text{original} = 1$$

$$\text{Decreases} = 1 - 1 = 0$$

$$\text{New} = 100 - 25 = 75\%$$

3. A number is increased by 25%, then it becomes 600. The original number is.

$$\text{New} = 100 + 25 = 125\%$$

$$\frac{25}{100} = \frac{1}{4} = \text{New} = 4 + 1 = 5$$

[Method 1st]

original no. = y

$$y + 25\% \text{ of } y = 600$$

$$y + \frac{25}{100} \times y = 600$$

$$\frac{125}{100} y = 600$$

$$y + \frac{1}{4} y = 600$$

$$y = 480 \text{ Ans}$$

[Method 2nd]

original no. = 100 %
New number = 125 %

$$125 \rightarrow 600 \quad 1 \rightarrow 600$$

$$100 \rightarrow 480$$

$$\text{original no} \rightarrow 480$$

[Method 3rd]

$$65\% = \frac{25}{100} = \frac{1}{4} \leftarrow \text{change}$$

$$\text{original} = 4$$

$$\text{new} = 4 + 1 = 5$$

$$5 \rightarrow 600$$

$$4 \rightarrow 480$$

$$100 \rightarrow 480$$

$$\text{original} \rightarrow 480 \text{ Ans}$$

Q) A number decreases by 20%, What becomes 120. The original number is _____

[Method 1st]

original = x

$$x - 20\% x = 120$$

$$x - \frac{20}{100} \times x = 120$$

$$x - 20\% = 120$$

$$x = \frac{120 \times 100}{80}$$

$$x = 150$$

[Method 2nd]

original = 100 %

$$80 \rightarrow 120$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

[Method 3rd]

20% = $\frac{1}{5}$ change

$$100 \rightarrow 80$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

$$100 \rightarrow 150$$

Caution!
Q(u) asked

Q A sum is decreased by $\frac{33}{3} + \frac{1}{3}\%$, then it becomes 180. The original number is

$$\left(33 + \frac{1}{3}\right)\%$$

$$33 + \frac{1}{3}\%$$

$$\frac{99+1}{3} = 100\%$$

$$= \frac{100}{99} \rightarrow \text{In fraction}$$

$$\text{original} = 3$$

$$\text{New} = 3 - 1 = 2$$

$$2 \rightarrow 180$$

$$1 \rightarrow \frac{180}{2}$$

$$3 \rightarrow \frac{180}{2} \times 3 = 270 \text{ Ans}$$

TCS

Q → Total income year 99 of 2017, 2018, 2019 is RS 364. Every year the salary grows by 20%. Find the income in 2017...

2018 / 2021

WY

$$2017 + 2018 + 2019 = 364$$

$$\text{Salary} = 20$$

$$\text{original} = 100$$

$$\text{New} = 100 + 20 = 120 \text{ for 1st}$$

$$100 + 20 + 20$$

$$120 \rightarrow 564$$

$$1 \rightarrow 364$$

$$120$$

$$100 \rightarrow 364 \times \frac{100}{120} = 303$$

$$\frac{182}{910}$$

$$100 \rightarrow 303$$

$$\frac{20}{100} = \frac{1}{5}$$

$$\text{original} = 5$$

$$\text{New} = 5 + 1 = 6$$

$$3 \rightarrow 364$$

$$1 \rightarrow 364$$

$$3$$

$$6 \rightarrow 364$$

$$3$$

$$5 \rightarrow 364 \times 5$$

$$3 \times 6$$

$$2017, 2018, 2019 = 364$$

$$2017 \rightarrow 100$$

$$2018 \rightarrow 120$$

$$2019 \rightarrow 1240x \quad 144$$

$$120 + 24 = 144$$

$$120 \times 20$$

$$24$$

$$91 \rightarrow 364$$

$$25$$

$$1 \rightarrow 364 \times 25$$

$$91$$

$$1 \rightarrow 4 \times 25$$

$$(2017) 1 \rightarrow 100 \text{ days}$$

$$\text{cc } 2018$$

$$60 \times 20$$

$$1 \rightarrow 100$$

$$\frac{6}{5} \rightarrow 100 \times 6 = 120$$

$$20$$

$$2019$$

$$1 \rightarrow 100$$

$$\frac{36}{25}$$

$$\frac{36}{25} \rightarrow 100 \times 36 = 1214$$

$$\frac{20}{100} = \frac{1}{5}$$

$$\frac{144}{5} = \frac{144}{5}$$

$$\frac{6}{5} + \frac{1}{5} = \frac{7}{5}$$

$$\frac{6}{5} + \frac{1}{5} \times 6 = \frac{6}{5} + \frac{6}{5} = \frac{12}{5}$$

$$= \frac{36}{25}$$

$$2017 \rightarrow 1$$

$$= \frac{146 + 36}{5 \times 25}$$

$$2018 \rightarrow \frac{6}{5}$$

$$2019 = 206/25 = \frac{25}{25} + \frac{30}{25} + \frac{126}{25}$$

$$= \frac{91}{25}$$

expenditure \rightarrow Kharcha

Q) The price of petrol is increased by 10% in order to keep the expenditure constant. By what % usage must be reduced?

Let petrol price = 1

$$\frac{10}{100} = \frac{\text{Increased price} = 1 + \frac{10}{100}}{10}$$

Price \uparrow Consumption \downarrow Expenditure \rightarrow constant

$$\text{Usage} = 1$$

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

$$x \cdot y = \text{constant}$$

Price \uparrow usage \downarrow = expenditure

Price \uparrow all \downarrow = profit

Speed \uparrow time \downarrow = distance

Track

$$\frac{x}{100 \pm x} \times 100$$

Price \uparrow x usage \downarrow = expenditure

$$\frac{x}{100 \pm x} \times 100$$

$$= \frac{10}{100 + 10} \times 100 = 9.09\% \text{ decrease}$$

$$= \frac{10}{100 + 10} \times 100$$

$$= \frac{10}{110} \times 100 = 9.09\% \text{ decrease}$$

Let's take 100 as the consumption
then price = 10

Q) The price of cotton decreased by 25% in order to keep the expenditure constant. What % consumption must be increased?

$$= \frac{25}{100 - 25} \times 100 \Rightarrow \frac{25}{75} \times 100 = 33.33\%$$

$$= \frac{15}{3} = 5$$

$$= 33.33\%$$

Q) A is 25% less than B.

cost price of A is 1000 Rs

$$\frac{100}{100-25} \times 1000 = 1333.33 \text{ Rs}$$

by 33.33% decrease

Q) cost of Indian TV sets

1. 5% of 1000
2. 10% of 1000
3. 15% of 1000
4. 20% of 1000

15/1000 2000 Rs

Q) Indian film industry is 21% more than than the Indian TV industry. By what % is Indian TV industry less than Indian film industry?

$$\frac{21}{100} \times 100 = 21\%$$

21%

$$\frac{200}{100+200} \times 1000 = 666.67$$

$$\frac{200}{200+200} \times 1000 = 500$$

$$\frac{100}{100+100} \times 1000 = 333.33$$

total of 1000000 Rs