Average speed -

$$\text{AV. Speed} = \frac{\text{total distance}}{\text{time taken}}$$

$$\text{Av. Speed} = \frac{2xy}{x+y}$$

$$\text{Av. Speed} = \frac{3xyz}{xy+yz+zx}$$

Qu – 1. A motor car covers the first 30 km at the speed of 15 km/hr the second 30 km at the speed of 20 km/hr and the last 30 km at the speed of 25 km /hr. find the average speed of the car.

Soln -

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{time} = \text{distance} / \text{speed}$$

(1) time = 30/ 15 hr

(2) time = 30/20 hr

(3) time = 30/25 hr

$$\text{average speed of the car} = \frac{30+30+30}{30/15 + 30/20 + 30/25}$$

$$= 90 / 2 + 1.5 + 1.2$$

$$= 90 / 4.7$$

$$= 19.15 \text{ km/hr}$$

or

$$\text{average speed} = \frac{3xyz}{xy+yz+zx}$$

$$= \frac{3 * 15*20*25}{15*20 +20*25 + 25* 15}$$

$$= 22500/1175$$

$$= 19.15 \text{ km /hr}$$

Qu – 2. A man travelled from one place to another at the rate of 20km/hr & returned at the rate of 30 km/hr. find the average speed in the whole journey

Soln -

$$\text{average speed} = \frac{2 * 20 * 30}{20+30}$$

$$= 1200/ 50 = 24 \text{ km/hr}$$

Qu – 3. A man travels from A to B at 20 km/hr & he came back from B to A in 30 km/hr & again he travel from A to B at 40 km/hr . Find the average speed of whole journey .

Soln -

A 20 km/hr B A 30Km/hr B A 40km/hr B

Average speed = 3 xyz / xy +yz+xz

= 3 *20*30*40/ 20*30+30*40+40*20

= 72000 / 600+1200+800

= 72000 / 2600

= 27.69 km/hr

Or time = distance / speed

(1) t_1 = d / 20

(2) t_2 = d / 30

(3) t_3 = d / 40

average speed = d+d+d / d/20 +d/30 +d/40

= 3d / 6d +4d +3d / 120

= 3d / 13 d / 120

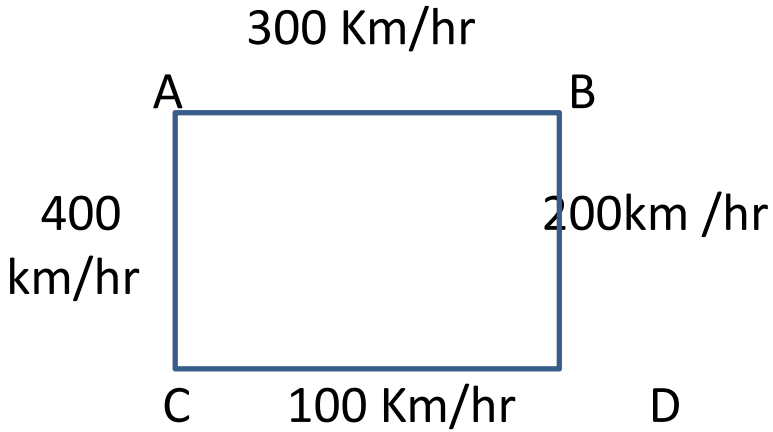
= 3 * 120 / 13 = 360 / 13 = 27.69 km /hr

LCM

10	20,30,40
2	2, 3 , 4
	1, 3 , 2

Qu -4. a car driver covers a distance of 143 km from Delhi to Agra rate of 50 km/hr . In return journey he covers the distance at the rate of 100 km/hr . Find the average speed of the journey to and from (2019) 66.66km/h

Qu – 5. an aero plane flies around a square sides of which measure 100 km each. The aero plane covers at a speed of 100 km /hr the first side ; at 200 km/hr the second side, ay 300 km/hr the third side and at 400 km/hr the fourth side . Use the correct mean to find average speed around the square.



Hint 1. average speed = 2 xy / x+y

Hint 2

total distance = 400 km

total time =100/100 + 100/ 200 + 100 / 300 + 100/400

average speed = 400/1+0.5+0.33+0.25

= 192.30 km/h

Qu – 6. Travelling from Delhi to Pune , Rohan drive his car for 2 hours at a speed of 50 km/hr & for 5 hours at 80 km /hr . What was his average speed during the whole journey .

Soln - distance = speed * time

$d_1 = 50*2 = 100$ km

& $d_2 = 80*5 = 400$ km

$$\text{average speed} = \frac{\text{total distance}}{\text{time taken}} = \frac{100 + 400}{5 + 2}$$

$$= 500 / 7$$

$$= 71.42 \text{ km/hr}$$

Qu – 7. A truck covers first one third of a certain distance with a speed of 10 km/hr, the next one third with a speed of 30 km/hr & the last one third with a speed of 20 km/hr. what will be the average speed of truck during whole journey .

Soln - time = distance / speed

$$t = d/3 \,/\, 10 = d \,/\, 30$$

$$t = d/3 \,/\, 30 = d \,/\, 90$$

$$t = d/3 \,/\, 20 = d \,/\, 60$$

10	30,90,60
3	3 , 9 6
	1 , 3 2

average speed = $d \,/\, d/30 + d/90 + d/60$

$= d \,/\, 6d + 2d + 3d/180$

$= d * 180 \,/\, 11d$

$= 180 / 11 =$ 16.36 km /hr

Qu – 8 . Neeta travelled from town A to B at a speed of 30km/hr . She returned from town B to A in same car at a speed of 60 km/hr . Find average speed . 40km/h

Qu – 9. A man travels from A t o B at 39 km distance with a speed of 15 km/hr & he travels from B to C at 52 km distance with a speed of 18 km/hr . Find the average speed of whole journey . 16.57km/h

(2019)

Qu – 10. - A shopkeeper has 50 cold drink bottles . Some of he bottles are 1 liter & some are 2 liter bottles . The average cold drink of the bottles is 1200 ml . Find the number of 2 liter bottles.

(1 liter = 1000 ml) .

Hint - $n_1 + n_2 = 50$ average = 1200ml , $\overline{x_1}$ = 1000ml

$\overline{x_2}$ = 2000 ml

combined mean = ? 10 bottle

Qu find the average of n natural number?

ans n + 1 /2

Qu – find the average of first 100 natural number?

Qu – find the average of n even number?

ans n + 1

Qu find the average of first 50 even number?

Qu - find the average of n odd number?

ans n

Qu find the average of first 50 odd number?

Qu -**10**

$\sum_{i=1} (x_i - 50) = 100$ then sample mean is

Qu- What will be average price of all the goods bought , if Ajay buys 30 erasers for Rs. 3 each, 35 choclates for Rs. 10 each & 25 clips at the rate of Rs. 4 each-

Soln

1. 30 eraser, 3 each

   total = 30*3 = 90 Rs

2. 35 chocolate , 10 each

   total = 35*10 = 350 Rs

3. 25 clips , 4 each

   total = 25 * 4 = 100 Rs

total no. of goods = 30+35+25 = 90

$$\text{average} = \frac{\sum x}{n} =$$

= 90+350+100 / 90

= 540 /90

= 6 Rs

Qu - Without considering the salary of the boss, the average salary reduces by Rs 1000, what will be salary of boss if average salary of 11 employees & the boss is Rs 18000.

Soln - total salary of 12 employees (11 + boss)

= 18000*12 = 216000 Rs

after reduces salary will be 18000 – 1000 = 17000 Rs

total salary of 11 employees = 17000*11 = 187000 Rs

so the salary of boss = 216000- 187000 = 29000 Rs

Qu – Average age of 5 people is 42 years. Another group has 8 people who have average age of 81 years .When both are mixed, what is the average age of all people.

Soln - 66 years

Qu – (2021)- the mean of a certain number of observations is 40. if two or more items with values 50 and 64 are added to this data, the mean rises to 42. find the number of items in the original data.

N = 57

Qu – 2021- from the following distribution, calculate missing frequency if mean of distribution is 211

Class	100-150	150-200	200-250	250-300	300-350
f	4	5	a	2	2

a=12