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CLASS : V

SUBJECT : MATHEMATICS

CHAPTER NUMBER: 11

CHAPTER NAME : AVERAGE

SUB-TOPIC : INTRODUCTION, EXERCISE 11 A Q. NO.1 TO 3

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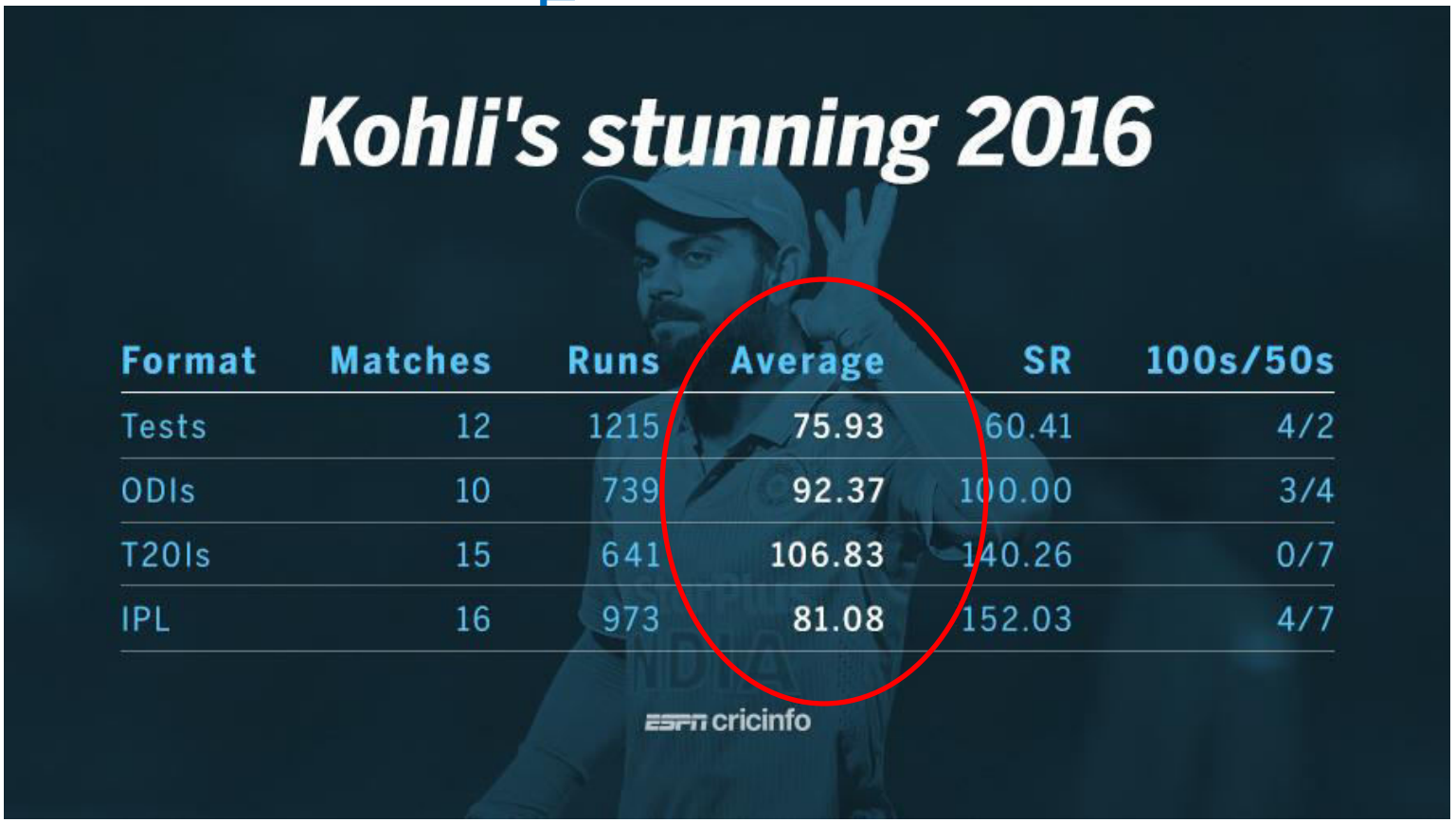
AVERAGE



Have you ever heard of the word "***Average***"?

AVERAGE

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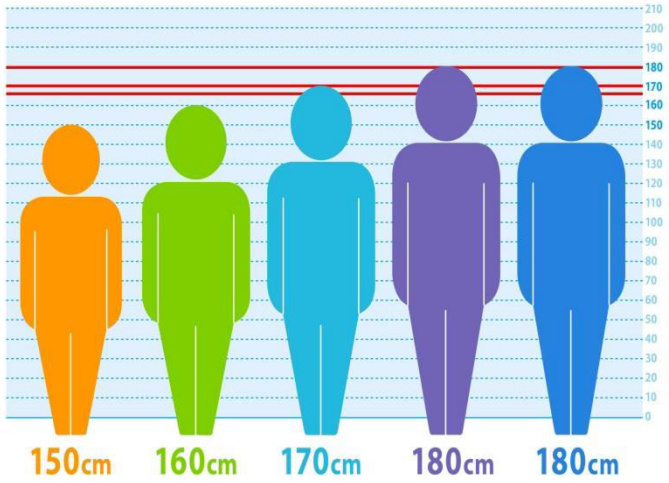
In math, an average is a number obtained by **adding a group of numbers**, then **dividing the sum** by the number of **numbers** there were.

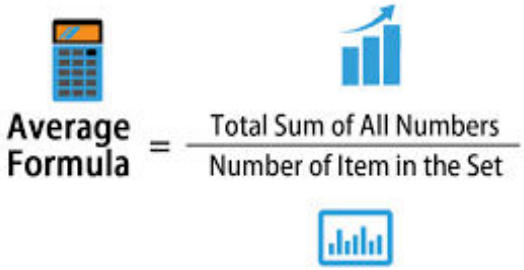
Example :
What is the average height of these 5 people?



$$\text{Average heights} = \frac{\text{Sum of the heights}}{\text{Number of people}} = \frac{150 + 160 + 170 + 180 + 180}{5}$$

$$= \frac{840}{5} = \textbf{168 cm.}$$

AVERAGE



From the above example it is clear that

- ✧ An average is a number which roughly between the smallest and the largest number / quantity.
- ✧ It gives an idea of the general value of a group.
- ✧ The average is the arithmetical mean value of the number of given values/ quantities.

AVERAGE

EXERCISE 11 A

1. Find the average

a) 50, 41, 47, 48, 40, 44

$$\text{Average} = \frac{\text{Sum of the quantities}}{\text{Number of quantities}}$$

$$= \frac{50 + 41 + 47 + 48 + 40 + 44}{6}$$

$$= \frac{270}{6} = \mathbf{45}$$

b) 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

$$\text{Average} = \frac{\text{Sum of the quantities}}{\text{Number of quantities}}$$

$$= \frac{10 + 20 + 30 + 40 + 50 + 60 + 70 + 80 + 90 + 100}{10}$$

$$= \frac{550}{10} = \mathbf{55}$$

AVERAGE

EXERCISE 11 A

1. Find the average

e) $\frac{3}{8}, 1\frac{1}{4}, 2\frac{5}{6}, 4\frac{1}{2}, 6\frac{4}{3}$

$= \frac{3}{8} + \frac{5}{4} + \frac{17}{6} + \frac{9}{2} + \frac{22}{3}$

L.C.M. of 8, 4, 6 ,2, 3= 24

$\frac{= 9 + 30 + 68 + 108 + 176}{24} = \frac{391}{24}$

The number of quantities given = 5

Average = $\frac{391}{24} \div 5 = \frac{391}{24} \times \frac{1}{5} = \frac{391}{120} = 3\frac{31}{120}$

AVERAGE

EXERCISE 11 A

2. The rainfall in Jamshedpur for 6 consecutive years was 28.5 cm, 30.25cm, 32.4 cm, 31.6cm, 24cm and 30.25cm. Find the average rainfall of Jamshedpur.

Solution:

The rainfall for 1st year= 28. 5 cm

2nd year= 30.25 cm

3rd year= 32.4 cm

4th year= 31.6 cm

5th year = 24 cm

6th year = 30. 25 cm

AVERAGE

EXERCISE 11 A

ROUGH

$$\text{Average} = \frac{\text{Sum of the quantities}}{\text{Number of quantities}}$$

$$= \frac{28.5 + 30.25 + 32.4 + 31.6 + 24 + 30.25}{6}$$

$$= \frac{177}{6} = \mathbf{29.5\ cm}$$

```
      29.5
   ------
6 | 177.0
    12
    ---
     57
     54
     ---
      30
      30
      --
       0
```

Thus the average rainfall of Jamshedpur is **29.5 cm.**

EXERCISE 11 A

3. Find the average of all even numbers between 7 and 23

The even numbers are= 8,10,12,14,16,18,20,22

$$\text{The sum} = \frac{8 + 10 + 12 + 14 + 16 + 18 + 20 + 22}{10}$$

$$= \frac{120}{8} = \mathbf{15}$$

- Complete exercise 11 A Q.No. 4 in the notebook.

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Students are able to:

- Find the average of given data
- Understand the concept and use of the word "*Average*"

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CLASS : V

SUBJECT : MATHEMATICS

CHAPTER NUMBER: 11

CHAPTER NAME : AVERAGE

SUB-TOPIC : EXERCISE 11 A Q. NO.5 TO 7

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AVERAGE

EXERCISE 11 A

5. The age , height and weight chart of 5 students is given below.

Name	Age	Height	Weight
Radha	8 y 3 m	121 cm	25.5 kg
Renu	9 y 1m	130 cm	28 kg
Rakhi	8 y 8 m	128 cm	27.8 kg
Rani	10 years	131 cm	30 kg
Ranju	9 y 5 m	130 cm	29 .6 kg

a. Radha's age= 8 x 12 + 3 = 96 + 3 = 99 months

Renu's age= 9 x 12 + 1 = 108 + 1 = 109 months

Rakhi's age= 8 x 12 + 8 = 96 + 8 = 104 months

AVERAGE

EXERCISE 11 A

Rani's age= 10 x 12 = 120 months

Ranju's age= 9 x 12 + 5 = 108 + 5 = 113 months

The average age $= \frac{99 + 109 + 10\,4 + 120 + 113}{5} = \frac{545}{5}$ **= 109 months**

= 9 months 1 month

b. Total height of 5 students= 121 + 130 + 128 + 131 + 130 = 640

Average height of 5 students $= \frac{640}{5}$ **= 128 cm.**

AVERAGE

EXERCISE 11 A

c. Total weight of 5 students = 25.5 + 28 + 27.8 + 30 + 29.6 = 140.9 kg

Average weight of students = $\frac{140.9}{5}$ **= 28 . 18 kg**

ROUGH

$\frac{1409}{10} \times \frac{1}{5}$

$= \frac{1409}{50}$

$= 28 . 18$

AVERAGE

EXERCISE 11 A

6. The marks of 20 students of a class in a mathematics test are below

34, 42, 54, 76, 82, 26, 78, 67, 62, 54, 17, 25, 39, 42, 66, 78, 80, 92, 26, 40.

a. The average mark of the class =

$$\frac{34+ 42+ 54+76+82+26+78+67+ 62+ 54+17+25+ 39+42+ 66+ 78+ 80+ 92 + 26+40}{20}$$

$$= \frac{1080}{20} = 54$$

b. 9 students scored marks more than the average marks.

c. 9 students scored marks less than the average marks.

d. 2 students scored marks equal to the average marks.

AVERAGE

EXERCISE 11 A

7. The daily attendance of classes V A, V B, and V C on 5 days of a week are given below

Class	Monday	Tuesday	Wednesday	Thursday	Friday
V A	48	50	52	46	44
V B	49	51	48	45	47
V C	50	47	45	48	50

The average weekly attendance of V A $= \frac{48 + 50 + 52 + 46 + 44}{5} = \frac{240}{5} = 48$

The average weekly attendance of V B $= \frac{49 + 51 + 48 + 45 + 47}{5} = \frac{240}{5} = 48$

The average weekly attendance of V C $= \frac{50 + 47 + 45 + 48 + 50}{5} = \frac{240}{5} = 48$

AVERAGE

EXERCISE 11 A

a. All the classes have same attendance.

The average attendance of 3 classes on Monday = $\frac{48 + 49 + 50}{3} = \frac{14}{73} = 49$

The average attendance of 3 classes on Tuesday = $\frac{50 + 51 + 47}{3} = \frac{14}{83} = 49.33$

The average attendance of 3 classes on Wed-day = $\frac{52 + 48 + 45}{3} = \frac{14}{53} = 48.33$

The average attendance of 3 classes on Thu-day = $\frac{46 + 45 + 48}{3} = \frac{13}{93} = 46.33$

The average attendance of 3 classes on Friday = $\frac{44 + 47 + 50}{3} = \frac{14}{13} = 47$

AVERAGE

EXERCISE 11 A

b. i. On Tuesday the average attendance of all the classes was the best.

ii. On Thursday the average attendance of all the classes was the worst.

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Students are able to:

- Find the average of given data
- Understand the concept and use of the word "*Average*"

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CLASS : V

SUBJECT : MATHEMATICS

CHAPTER NUMBER: 11

CHAPTER NAME : AVERAGE

SUB-TOPIC : EXERCISE 11 A Q. NO.8 TO 11

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AVERAGE

EXERCISE 11 A

8. The marks of 6 students in 6 subject are given below

Name	Eng	Hin	Maths	Sci	Hist	Geo
Amar	63	58	85	68	70	64
Balbir	50	37	41	40	50	46
Chander	82	48	91	88	74	73
Dilraj	60	58	62	60	65	67
Ela	48	51	47	50	51	47
Fatima	75	48	70	66	80	75

EXERCISE 11 A

A.

The average marks in English = 63 + 50 + 82 + 60 + 48 + 75 = $\frac{378}{6}$ = **63**

The average marks in Hindi = 58 + 37 + 48 + 58 + 51 + 48 = $\frac{300}{6}$ = **50**

The average marks in Maths = 85 + 41 + 91 + 62 + 47 + 70 = $\frac{396}{6}$ = **66**

The average marks in Science = 68 + 40 + 88 + 60 + 50 + 66 = $\frac{372}{6}$ = **62**

The average marks in History = 70 + 50 + 74 + 65 + 51 + 80 = $\frac{390}{6}$ = **65**

The average marks in Geo = 64 + 46 + 73 + 67 + 47 + 75 = $\frac{372}{6}$ = **62**

EXERCISE 11 A

B.

The average marks of Amar= $63 + 58 + 85 + 68 + 70 + 64 = \frac{408}{6}$ **= 68**

The average marks of Balbir= $50 + 37 + 41 + 40 + 50 + 46 = \frac{264}{6}$ **= 44**

The average marks of Chander= $82 + 48 + 91 + 88 + 74 + 73 = \frac{456}{6}$ **= 76**

The average marks of Dilraj= $60 + 58 + 62 + 60 + 65 + 67 = \frac{372}{6}$ **= 62**

The average marks of Ela = $48 + 51 + 47 + 50 + 51 + 47 = \frac{294}{6}$ **= 49**

The average marks of Fatima = $75 + 48 + 70 + 66 + 80 + 75 = \frac{414}{6}$ **= 69**

c. Mathematics has the highest average.

d. Hindi has the lowest average.

Let's find the sum of the quantities.

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As we know

$$\text{Average Formula} = \frac{\text{Total Sum of All Numbers}}{\text{Number of Item in the Set}}$$

- Total sum of the quantities= Average x No. of observations / quantities

Example : 1

Daisy's father earns on an average ₹ 4300 a week. How much does he earn in a year of 52 weeks.

Solution:

Average earning of daisy's father in a week = ₹ 4300

Total earning in a year = ₹4300 x 52

= ₹ 2,23,600

∴ He earns **₹ 2,23,600** in a year of 52 weeks.

EXERCISE 11 A

9. Srikanth's average marks in 6 subjects in an examination were 65. he scored 64 in English, 68 in Hindi, 58 in Maths, 55 in Science and 70 in History. How many marks did he get in Geography?

Solution

Average marks in 6 subject = 65

Total marks scored = 65 x 6 = 390

A/q total marks scored in five subject = 315

Marks scored in Geography = 390 – 315 **=75**

∴ He got 75 in geography.

ROUGH

64
68
58
\+ 55
70

315

390
\- 315

75

EXERCISE 11 A

10. The average weight of a group of 8 children is 25.6 kg. The average weight of another group of 7 children is 26.2 kg. Find the average weight of the group of 15 children.

Solution :

Average weight of 8 children = 25.6 kg

Total weight of 8 children = 25.6 x 8 = 204.8 kg

Average weight of 7 children = 26.2 kg

Total weight of 7 children = 26.2 x 7 = 183.4 kg

Total weight of 15 children = 204.8 kg + 183.4 kg = 388.2 kg

Average weight of 15 children = $\frac{388.2}{15}$ = 25.88 kg

Rough

204.8
+ 183.4
388.2

25.88
15) 388.2
5
30
88
75
132
120
120
120
0

EXERCISE 11 A

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11. The average age of 10 children is 9 years 9 months. The average age of 9 children is 8 years 11 months. What is the age of the tenth child?

Solution :

The average age of 10 children = 117 months

Total age of 10 children =117 x 10 = 1170 months

The average age of 9 children = 107months

Total age of 9 children = 107 x 9 = 963 months

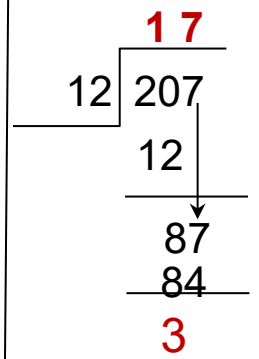
The age of the tenth child = 1170 – 963 =207 months

= 17 years 3 months

Rough

9 y 9 m =
9 x 12 + 9 =
108 + 9= 117 m

8y 11 m=
8 x 12 + 11=
96 +11= 107 m



- Complete exercise 11 A no.12 in the note book.

Learning Outcomes

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Students are able to:

- Find the sum of the quantities of given Average

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