

# Body Mass Index (BMI)

## Objective

To investigate the health of students of a class based on the Body Mass Index (BMI).

Where  $BMI = \frac{\text{weight}}{\text{Height}^2}$

## Description

Measured the heights of all students in my class.

Measured their weights in kg.

Established the relationship between height and weight for boys and girls separately.

**For Girls:-**

<b>Roll. No of Student</b>	<b>Height in m</b>	<b>Weight in Kg</b>
1.	1.54	36
2.	1.58	45
3.	1.60	44
4.	1.59	56
5.	1.54	55
6.	1.55	43
7.	1.56	56
8.	1.54	57
9.	1.53	43
10.	1.58	38
11.	1.59	59
12.	1.60	45
13.	1.61	56
14.	1.62	54
15.	1.63	53
16.	1.66	52
17.	1.65	45
18.	1.65	43

**Calculation:-****Case 1 (Girls):-**

$$\text{BMI for roll. No. 1} = \frac{\text{weight}}{\text{Height}^2}$$

$$= \frac{36}{1.54^2}$$

$$= \frac{36}{2.37}$$

$$= 15.18$$

Similarly calculated BMI for all girls.

<b>Roll.No</b>	<b>Weight in Kg</b>	<b>Square of Height</b>	<b>BMI</b>
1.	40	2.3716	16.86625
2.	45	2.4964	18.02596
3.	44	2.56	17.1875
4.	65	2.5281	25.71101
5.	55	2.3716	23.19109
6.	43	2.4025	17.89802
7.	56	2.4336	23.01118
8.	57	2.3716	24.03441
9.	43	2.3409	18.369
10.	38	2.4964	15.22192
11.	59	2.5281	23.33768
12.	45	2.56	17.57813
13.	56	2.5921	21.6041
14.	54	2.6244	20.57613
15.	60	2.6569	22.58271
16.	68	2.7556	24.67702
17.	45	2.7225	16.52893
18.	65	2.7225	23.87511

**Result of Student's Health according to following table:-**

<b>BMI</b>	<b>Health</b>
<b>Less than 20</b>	<b>Under weight</b>
<b>20-25</b>	<b>Good health</b>
<b>25-30</b>	<b>Over weight</b>
<b>30 and above</b>	<b>Obese(Very fat)</b>

**Roll. No. 1 Under weight**

**Roll. No. 5 has good health**

**Roll No. 4 is over weight**

**There is no obese girl.**

<b>Roll.No</b>	<b>BMI</b>	<b>Health</b>
1.	16.86625	Under weight
2.	18.02596	Under weight
3.	17.1875	Under weight
4.	25.71101	over weight
5.	23.19109	good health
6.	17.89802	Under weight
7.	23.01118	good health
8.	24.03441	good health
9.	18.369	Under weight
10.	15.22192	Under weight
11.	23.33768	good health
12.	17.57813	Under weight
13.	21.6041	good health
14.	20.57613	good health
15.	22.58271	good health
16.	24.67702	good health
17.	16.52893	Under weight
18.	23.87511	good health

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<b>Roll. No</b>	<b>Square of Height</b>	<b>Weight in Kg</b>	<b>BMI</b>
19.	2.56	42	16.40625
20.	2.5281	45	17.79993
21.	2.6244	49	18.67093
22.	2.5281	50	19.7777
23.	2.8224	65	23.03005
24.	2.89	70	24.22145
25.	3.0625	80	26.12245
26.	2.7225	60	22.03857
27.	3.0625	68	22.20408
28.	3.0976	68	21.95248
29.	3.2041	80	24.96801
30.	2.4336	45	18.49112
31.	2.5921	56	21.6041
32.	2.8561	54	18.9069
33.	2.6569	53	19.94806
34.	2.7556	63	22.86253
35.	3.0625	79	25.79592
36.	2.7225	43	15.79431



**Calculation:-****Case 1 (Boys):-**

$$\text{BMI for roll. No. 19} = \frac{\text{weight}}{\text{Height}^2}$$

$$= \frac{42}{1.6^2}$$

$$= \frac{42}{2.56}$$

$$= 16.86$$

Similarly calculated BMI for all boys.

**Data for Boys:-**

<b>Roll.No</b>	<b>Weight in Kg</b>	<b>Square of Height</b>	<b>BMI</b>
19.	42	2.3716	16.86625
20	45	2.4964	18.02596
21	49	2.56	17.1875
22	50	2.5281	25.71101
23	65	2.3716	23.19109
24	70	2.4025	17.89802
25	80	2.4336	23.01118
26	60	2.3716	24.03441
27	68	2.3409	18.369
28	68	2.4964	15.22192
29	80	2.5281	23.33768
30	45	2.56	17.57813
31	56	2.5921	21.6041
32	54	2.6244	20.57613
33	53	2.6569	22.58271
34	63	2.7556	24.67702
35	79	2.7225	16.52893
36	43	2.7225	23.87511

**Result of Student's Health according to following table:-**

<b>BMI</b>	<b>Health</b>
<b>Less than 20</b>	<b>Under weight</b>
<b>20-25</b>	<b>Good health</b>
<b>25-30</b>	<b>Over weight</b>
<b>30 and above</b>	<b>Obese(Very fat)</b>

**Roll. No. 19 Under weight**

**Roll. No. 23 has good health**

**Roll No. 25 is over weight**

**There is no obese boy.**

<b>Roll.No</b>	<b>BMI</b>	<b>Health</b>
19.	16.86625	Under weight
20	18.02596	Under weight
21	17.1875	Under weight
22	25.71101	Over weight
23	23.19109	Good health
24	17.89802	Under weight
25	23.01118	Good health
26	24.03441	Good health
27	18.369	Under weight
28	15.22192	Under weight
29	23.33768	Good health
30	17.57813	Under weight
31	21.6041	Good health
32	20.57613	Good health
33	22.58271	Good health
34	24.67702	Good health
35	16.52893	Under weight
36	23.87511	Good health

Result the health of most of the students falls in the two categories under weight and good height.

**Suggestion:-** The under weight students need to take care of their diet to improve their health.

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