

Free essay on the bmi formula

[Health & Medicine](#), [Obesity](#)



In this topic we are going to solve inequalities which are based on the BMI. I will use Imperial BMI formula and use my height to solve for weigh. Then I will plug into this formula the BMI figures from the inequalities and find out the intervals.

$$(\text{Weight in pounds} * 703) / (\text{height in inches})^2 = \text{BMI}$$

Now I need to plug in my height which is 5'5. First I have to convert my height into inches. One foot is 12 inches. So my height in inches will be $5*5+5= 65$ inches.

The next step is to update the formula so that I could plug into it the value of BMI and find out the weight.

$$W = (\text{BMI} * (\text{height in inches})^2) / 703$$

Let's plug my height into this formula to prepare it for using in inequalities:

$$W = (\text{BMI} * 65^2) / 703$$

$$W = (\text{BMI} * 4225) / 703$$

If we divide 4225 by 703 we will get ~ 6 . Now I will simplify the formula little bit:

$$W = \text{BMI} * 6$$

Our intervals are:

$17 < \text{BMI} < 22$ might have a longer life span than average

$23 < \text{BMI} < 25$ probably not overweight

$25 < \text{BMI} < 29.9$ probably overweight

$\text{BMI} \geq 30$ obese

Now I have to calculate W (weight) equivalents for all of BMI figures including the last compound inequality, which is showing us that a person is obese if his BMI index is from 30 to infinity.

If BMI is equal to 17 weight = 102 because $w = \text{BMI} * 6$

If BMI is equal to 22 weight = 132 because $w = \text{BMI} * 6$

If BMI is equal to 23 weight = 138 because $w = \text{BMI} * 6$

If BMI is equal to 25 weight = 150 because $w = \text{BMI} * 6$

If BMI is equal to 29.9 weight = 179.4 because $w = \text{BMI} * 6$

If BMI is equal to 30 weight = 180 because $w = \text{BMI} * 6$

Now I can create the intervals and use W instead of the BMI. I will also write the set and interval notations and create simple graphs for each inequality.

$102 < W < 132$ might have a longer life span than average

Interval notation $\{W | 102 < W < 132\}$;

Set notation (102; 132);

$138 < W < 150$ probably not overweight

Interval notation $\{W | 138 < W < 150\}$;

Set notation (138; 150);

$150 < W < 179.4$ probably overweight

Interval notation $\{W | 150 < W < 179.4\}$;

Set notation (150; 179.4);

$W \geq 180$ obese

Interval notation $\{W | W \geq 180\}$;

Set notation $[180 ; +\infty)$;

Now I will evaluate the regions outside of the “ probably not overweight”.

Inequalities for these regions are:

$102 < W < 132$ $150 > W$

Interval notation $\{W | 102$

Set notation $(102 ; 132) \cup (150; \infty)$;

Finally I computed all weight ranges, but the problem is that this weight ranges can be misleading. This is due to the fact that, first of all, BMI does not differentiate the consistency of weight; weight can be caused by fat or muscles. The second problem is that in our inequalities we have no definition for the range of weights $[132; 138]$.