Math 104Q

Group Work: Calculate BMIs

Body Mass Index or BMI is a measurement that gives a ratio between an individual's weight and height. It is a better indicator of weight related health risks than body weight alone. Let's take a look at how BMI is calculated, and how it is used by health professionals to assess health risks.

a. You work at a doctor's office, and had been asked to calculate the BMI of Ms. Beemie, who weights 125 pounds, and is 5'3'' tall. Use the following three-step procedure to calculate Ms. Beemie's BMI:

Step 1: Multiply her weight (in pounds) by 703.

Step 2: Multiply her height by her height (in inches) or find her height squared.

Step 3: To get her BMI, divide the answer in Step 1 by the answer in Step 2 . Round the answer to the nearest whole number.

BMI Value	**Health Risk Based Solely On BMI**
BMI < 25	Minimal
25 ≤ BMI < 27	Low
27 ≤ BMI < 30	Moderate
30 ≤ BMI < 35	High
35 ≤ BMI < 40	Very High
BMI ≥ 40	Extremely High

Ms. Beemie's BMI is _____. Ms. Beemie's health risk is_____.

b. Let the letter *W* represent weight in pounds, and the letter *H* represent height in inches. Write an algebraic expression for BMI based on the three-step procedure above.

BMI =

c. To check your new formula for BMI, recalculate Ms. Beemie's BMI using the formula from part *b*.

Calculation:

BMI score:

d. Now use the formula for BMI in part *b* to construct a table of BMI scores using the heights 5'6" and 5'11" and a range of possible weights from 120 pounds to 200 pounds in increments of 10. Round answers to the tenths place.

Weight, W (pounds)	***703W***	**Height 5'6"**		**Height 5'11"**	
		H^2	**BMI**	H^2	**BMI**
120					
130					
140					
150					
160					
170					
180					
190					
200					

e. Explain how you could construct a more extensive BMI table that might be used by health professionals to measure fitness and health risk for most of their patients.

f. When using the metric system, we can calculate BMI by taking the weight (in kilograms) divided by the height (in meters) squared,

$$\text{BMI} = W/H^2$$

We can convert weight from pounds to kilograms and height from inches to meters with the help of the following conversion factors:

1 meter ≈39.37 inches and 1 kilogram ≈2.2 pounds

Recalculate Ms. Beemie's BMI by substituting her weight in kilograms and her height in meters into the metric system formula above. Then see if her BMI score checks with your answers for parts *a* and *c*.