

### Answer on Question #41031, Physics, Mechanics

#### Question:

The Body Mass Index (BMI) is given by  $[BMI = \text{mass} / (\text{height})^2]$  where the mass is measured in kg and height is measured in m. If a man of weight 800 N, and height 71 inches, what is his BMI (in  $\text{kg}/\text{m}^2$ )? Given that 1 m = 3.3 feet, and 1 foot = 12 inches.

- a) 11.3
- b) 25.5
- c) 28.2
- d) 27.7
- e) 23

#### Answer:

The Body Mass Index (BMI) is given by:

$$BMI = \frac{m}{h^2}$$

where  $m$  is mass measured in kg,  $h$  is height is measured in m.

Weight of the man equals:

$$P = mg$$

therefore mass equals:

$$m = \frac{P}{g} = \frac{800 \text{ N}}{9.81 \text{ m/s}^2} = 81.6 \text{ kg}$$

Height in meters equals:

$$h = \frac{71}{12 \cdot 3.3} = 1.79 \text{ m}$$

Therefore:

$$BMI = \frac{81.5}{1.79^2} = 25.5 \frac{\text{kg}}{\text{m}^2}$$

Answer: b) 25.5