

## 10.1 Health & Fitness

- ▶ Compare a person's weight, height, and body fat percentage.
- ▶ Interpret and use a person's heart rate and metabolism.
- ▶ Determine factors for cardiovascular health.

### Comparing Weight, Height, and Fat Percentage

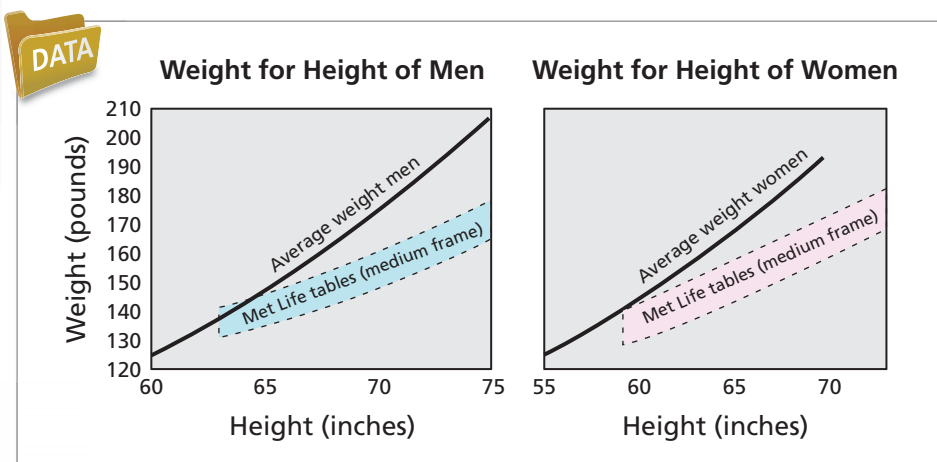
There are many different opinions about the “ideal” weight and body fat percentage for a person of a given height. Some of the opinions are expressed by tables, and some are expressed by formulas.

#### Study Tip

The Metropolitan Life Insurance Company *Height-Weight Tables* are available at [Math.andYou.com](http://Math.andYou.com). When using the tables, you are wearing shoes with 1-inch heels.

#### EXAMPLE 1 Analyzing the MetLife Height-Weight Tables

In a criticism of the MetLife tables, Steven B. Halls, MD, said, “For very tall men and women, the MetLife tables suggest impossibly low weights.” As part of the criticism, Halls presented the following graphs. What do Halls's graphs show?



#### SOLUTION

The graphs are roughly linear. The rate of increase of each graph is about 5 pounds per inch of height, as indicated by the following formulas.

Medium-framed men:  $\text{Weight} = 125 \text{ pounds} + 5 \text{ pounds per inch over } 5 \text{ feet}$

Medium-framed women:  $\text{Weight} = 145 \text{ pounds} + 5 \text{ pounds per inch over } 5 \text{ feet}$

Compared to average weights, the MetLife tables recommend unrealistically low weights, especially for tall people.

#### ✓ Checkpoint

Help at [Math.andYOU.com](http://Math.andYOU.com)

Here is another formula by Dr. G.J. Hamwi that first appeared in 1964.

Graphically compare this formula with the average weights of Americans.

Medium-framed men:  $\text{Weight} = 106 \text{ pounds} + 6 \text{ pounds per inch over } 5 \text{ feet}$

Medium-framed women:  $\text{Weight} = 100 \text{ pounds} + 5 \text{ pounds per inch over } 5 \text{ feet}$



*Ideal Body Weight* calculators are available at [Math.andYou.com](http://Math.andYou.com).