

Obesity Unit: Calculating BMI

What is BMI?

Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI is a fairly reliable indicator of body fatness for most people. BMI does not measure body fat directly, but research has shown that BMI correlates to direct measures of body fat. BMI can be considered an alternative for direct measures of body fat. Additionally, BMI is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems.

For children and teens, BMI is age- and sex-specific and is often referred to as BMI-for-age.

How is BMI used?

BMI is used as a screening tool to identify possible weight problems for adults and children. However, BMI is not a diagnostic tool. For example, a child may have a high BMI for age and sex, but to determine if excess weight is a health risk, a health care provider would need to perform further assessments. These assessments might include skinfold thickness measurements, evaluations of diet, physical activity, family history, and other appropriate health screenings.

For children, BMI is used to screen for obesity, overweight, healthy weight, or underweight. CDC and the American Academy of Pediatrics (AAP) recommend the use of BMI to screen for overweight and obesity in children beginning at 2 years old.

How is BMI calculated and interpreted?

Calculating and interpreting BMI involves the following steps:

1. Before calculating BMI, obtain accurate height and weight measurements.
2. Calculate the BMI and percentile using the formula:

$$\text{BMI} = \frac{\text{(weight in pounds)}}{\text{(height in inches)} \times \text{(height in inches)}} \times 703$$

BMI Categories for adults age 20 and over:

Underweight	=	<18.5
Normal weight	=	18.5-24.9
Overweight	=	25-29.9
Obesity	=	BMI of 30 or greater

After BMI is calculated for children and teens, the BMI number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children in the United States. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. The growth charts show the weight status categories used with children and teens (underweight, healthy weight, overweight, and obese).

For children and teens, BMI-for-age weight status categories and the corresponding percentiles are shown as follows:

Weight Status Category	Percentile Range
Underweight.....	Less than the 5th percentile
Healthy weight.....	5th percentile to less than the 85th percentile
Overweight.....	85th to less than the 95th percentile
Obese.....	Equal to or greater than the 95th percentile

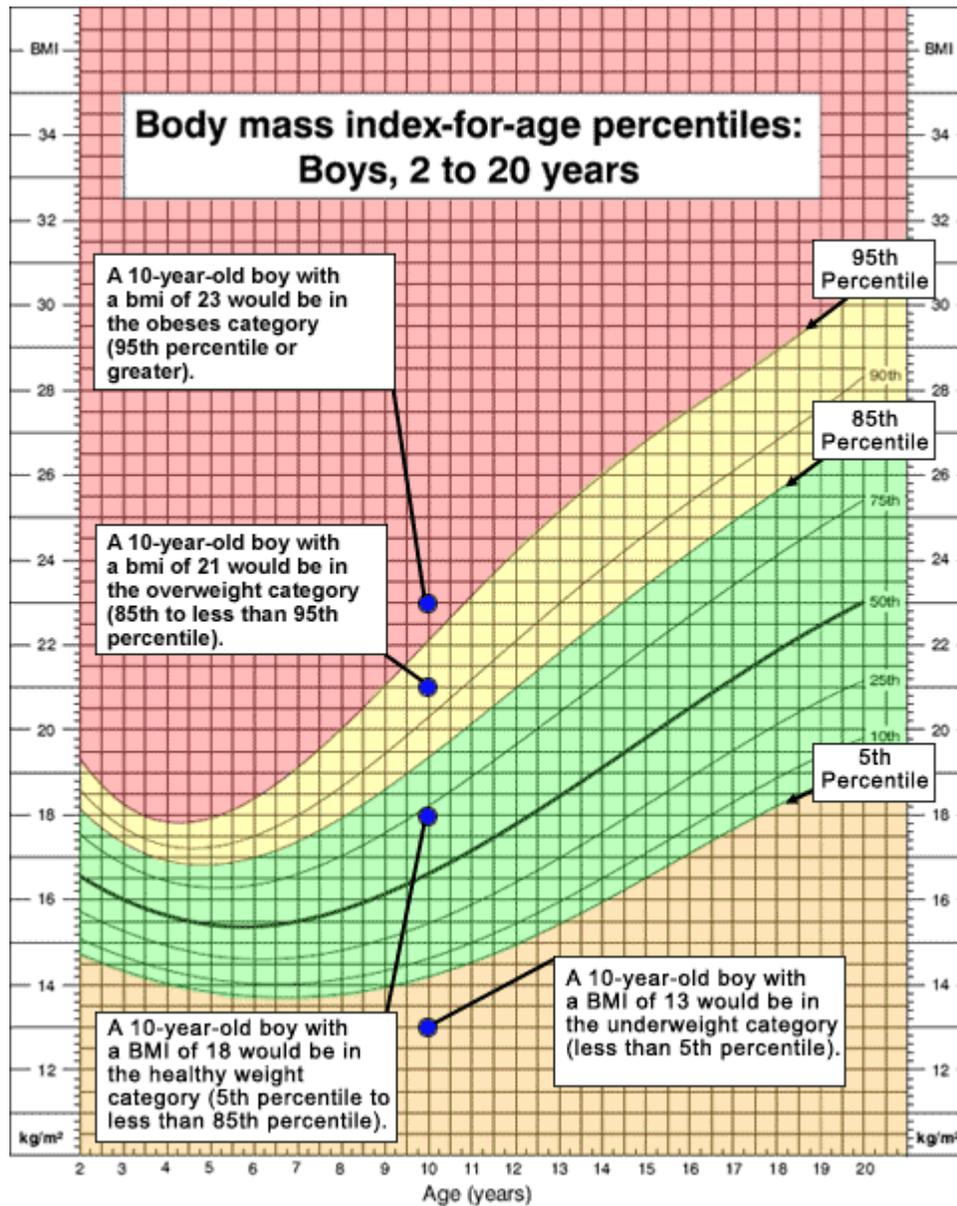
3. Review the calculated BMI-for-age percentile and results. The BMI-for-age percentile is used to interpret the BMI number because BMI is both age-and sex-specific for children and teens. These criteria are different from those used to interpret BMI for adults — which do not take into account age or sex. Age and sex are considered for children and teens for two reasons:

- The amount of body fat changes with age. (BMI for children and teens is often referred to as *BMI-for-age*.)
- The amount of body fat differs between girls and boys.

The CDC BMI-for-age growth charts for girls and boys take into account these differences and allow translation of a BMI number into a percentile for a child's or teen's sex and age.

Resource: Centers for Disease Control and Prevention (2010), About BMI for Children and Teens, Retrieved on 6/23/10 from [http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html#How is BMI calculated](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html#How%20is%20BMI%20calculated)

See the following example of how some sample BMI numbers would be interpreted for a 10-year-old boy.



The CDC BMI-for-age growth charts are available at: CDC Growth Charts: United States.

Resource: Centers for Disease Control and Prevention (2010), About BMI for Children and Teens, Retrieved on 6/23/10 from [http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html#How is BMI calculated](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html#How%20is%20BMI%20calculated)

Name: _____ Period: _____ Date: _____

Worksheet for calculating BMI:

Height in inches: _____ inches

Weight in pounds: _____ lbs.

Formula:

$$\text{BMI} = \frac{\text{(weight in pounds)}}{\text{(height in inches)} \times \text{(height in inches)}} \times 703$$

Show your work here:

My BMI is _____

According to the CDC BMI-for-age growth chart, my BMI-for-age percentile is _____.

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This means my weight status category is _____.