

1.2 Use Order of Operations a.6

QUESTION How can you use a graphing calculator to evaluate an expression?

You can use a graphing calculator to evaluate an expression. When you enter the expression, it is important to use grouping symbols so that the calculator performs operations in the correct order.

EXAMPLE Evaluate an expression

Use a graphing calculator to evaluate an expression.

Lean body mass is the mass of the skeleton, muscles, and organs. Physicians use lean body mass to determine dosages of medicine.

Scientists have developed separate formulas for the lean body masses of men and women based on their mass m (in kilograms) and height h (in meters). Lean body mass is measured in units called BMI (Body Mass Index) units.

$$\text{Men: } 1.10m - \frac{128m^2}{10,000h^2} \quad \text{Women: } 1.07m - \frac{148m^2}{10,000h^2}$$

Find the lean body mass (in BMI units) of a man who is 1.8 meters tall and has a mass of 80 kilograms.

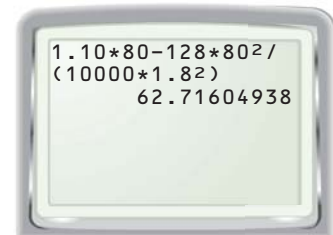
Solution

Enter the expression for men in the calculator. Substitute 80 for m and 1.8 for h . Because the fraction bar is a grouping symbol, enter the denominator using parentheses.

Use the following keystrokes.

1.10 \times 80 $-$ 128 \times 80 x^2 \div (10000 \times 1.8 x^2)

► The lean body mass of a man who is 1.8 meters tall and has a mass of 80 kilograms is about 62.7 BMI units.



PRACTICE

Use a calculator to evaluate the expression for $n = 4$. Round to the nearest thousandth.

1. $3 + 5 \cdot n \div 10$

2. $2 + \frac{3n^2}{4}$

3. $\frac{83}{3n^2} - 1.3$

4. $\frac{14.2n}{8 + n^3}$

5. $\frac{7 - n}{n^2}$

6. $5n^2 + \frac{4n^3 + 1}{3}$

7. Find the lean body mass (to the nearest tenth of a BMI unit) of a woman who is 1.6 meters tall and has a mass of 54 kilograms.