WEIGHT ON A STRING
Teaching Guidelines

Subject: Mathematics

Topics: Algebra--Equations and Expressions; Powers, Roots and Scientific Notation

Grades: 9 - 12

Knowledge and Skills:

- Can evaluate expressions by substituting values for variables

- Can simplify expressions using correct order of operations

- Understands the function of grouping symbols in an expression
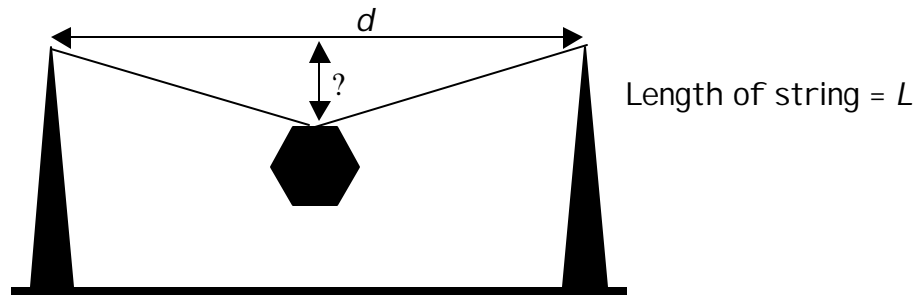
- Understands the concept "root"

Materials: None

Answers

L	d	How far down will the weight hang?
10 inches	8 inches	3 inches
100 cm	50 cm	43 cm
25.4 cm	20.1 cm	7.76 cm
200 feet	195 feet	22.2 feet
1.2×10^3 meters	9.8×10^2 meters	346 meters

Weight on a String
Skill Set

In the diagram below, a weight is hung from the center of a string of length *L* which is stretched between two points separated by distance *d*.

Length of string = *L*

The weight will hang down by a distance that is given by this expression:

$$\sqrt{\left(\frac{L+d}{2}\right)\left(\frac{L-d}{2}\right)}$$

1. Put these operations in the order in which they should be done according to the above expression:

   Divide by 2   *Add or subtract L and d*
   Take the square root   *Multiply*

2. Compute the value of the expression above for the given values of *L* and *d*:

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