Answer on Question #55249, Physics / Other

Two lengths L1=1.746 +_ 0.010m and L2=1.507+_ 0.010m are obtained by measurement.
L1 + L2

A. 3.253 +_ 0.014m
B. 3.253+_ 0.02m
C. 3.253+_0.10m
D. 3.253+_ 0.001m

Solution:

If two or more numbers are to be added then the absolute error in the result is the square root of the sum of the squares of the absolute errors of the inputs, i.e.

if

$$L = L_1 + L_2$$

then

$$\Delta L = \sqrt{(\Delta L_1)^2 + (\Delta L_2)^2}$$

In our case

$$\Delta L = \sqrt{(0.010)^2 + (0.010)^2} = 0.014$$

Answer: A. 3.253 +_ 0.014m