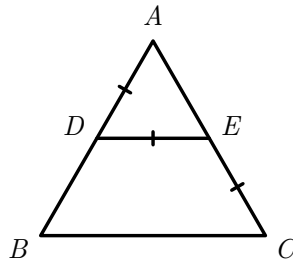


# WMU Math Club Math Challenge Problem November 2022

## The Problem.

Let  $ABC$  be an isosceles triangle with  $AB = AC = 4$ . Point  $D$  is on side  $AB$  (different from both  $A$  and  $B$ ) and point  $E$  is on  $AC$  with  $AD = DE = EC$ . If the length of  $AD$  is an integer, determine the possible lengths of  $BC$ .



## Instructions.

1. Solve the problem.
2. Type your solution to the problem, preferably in  $\text{T}_{\text{E}}\text{X}/\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ .
3. Email your solution to [david.richter@wmich.edu](mailto:david.richter@wmich.edu) before December 1, 2022.

**More Information.** If you submit the best solution, explained clearly and completely (and succinctly), then your solution will be posted here next month, you will be recognized as the winner during the next meeting of the WMU Math Club, and you will receive a prize (probably a book). All undergraduate and graduate students may submit solutions. Please include your name in your write-up. Please make contact with Prof. David Richter if you have any questions.

**Report from Last Month.** Among the 6 responses received, Ritabrato Chatterjee, Drew Daenzer, Abdul Nasser, Anika Tabbasum, and Aadarsha Thapa each gave a correct solution.