



PROBLEM OF THE WEEK #10
(Fall 2023)

I took a big bag of tokens to a party, containing some tokens worth 1 point, some worth 2 points, and some worth -1 point. Ben drew some tokens, and so did Cinda. Amazingly, it turned out that Ben and Cinda each drew an assortment of tokens for which:

1. the values added up to 19; and
2. the squares of the values added up to 99.

But given those remarkable coincidences, it was even more stunning that the cubes of Ben's token values added up to the smallest possible total m , while the cubes of Cinda's token values added up to the greatest possible total M . Find $\frac{M}{m}$.

[Please fully explain your answer.]

Email solutions to swensonj@uwplatt.edu by 2:00pm on Wednesday, November 29, 2023.

Every week, the best solution submitted earns a \$10 Platteville gift certificate; the top scorer each semester also wins a cash award. Good luck!

You can always see the Problem of the Week (and complete rules) online at:

<http://uwpmath.weebly.com/>