



The Seventh Annual  
**Utah Math Olympiad**

**Saturday, March 23, 2019**  
**1:00 - 4:00 pm**

Participation is free!  
Prize money is available for the top scorers.

For more information and to register, visit [www.utahmath.org](http://www.utahmath.org).  
Registration ends March 16.  
Contact us at [contact@utahmath.org](mailto:contact@utahmath.org).

### Sample Problem

Lavender has six nickels, four of which are authentic and two of which are counterfeit. She knows that the counterfeit nickels weigh less than the authentic ones, but they weigh the same as each other. She also has a balancing scale.



A “move” using the scale consists of placing some number of nickels on each side of the scale; the scale will indicate either that the left side is heavier, the right side is heavier, or that the two sides are equal. Determine a strategy for determining which two nickels are counterfeit which requires the fewest moves, and prove that no strategy with fewer moves is guaranteed to divide the counterfeit nickels from the authentic ones.

### Locations:

The Waterford School  
Math Building (400)  
Library

Brigham Young University  
Talmage Building  
Room 112