I U P U I
Math Club Teaser #2
October 10, 2008
(due October 17, 2008)

The malevolent Professor Zerep has captured Alice, Bob, and Carol, and locked them in the Tensor Tower.

Alice, calmly looking around, climbed the steps to the tower's upper part and glanced out the window. She realized it would be impossible to jump out and survive. But she saw a rope, forgotten by the masons, hanging near the window. The rope was thrown over a rusty pulley fastened to the tower wall above the window. Empty baskets were tied to each end of the rope. These baskets had been used by the masons to lift bricks and lower rubble. Alice knew that if one load was 10 pounds more than the other, the heavier basket would descend smoothly to the ground while the other rose to the window.

Looking at her friends, Alice guessed Bob's weight at 180 pounds and Carol's at 80. She herself weighed 100. In the tower she found 13 separate pieces of chain, each weighing 10 pounds. Now all three prisoners were able to reach the ground safely. At no time did a descending basket weigh over 10 pounds more than the ascending basket.

How did they escape?