

Puzzle of the Week

Pan Balance With Weights – 3

A pan balance tells you when its two sides are carrying the same amount of weight or whether one side is heavier than the other.

THE CHALLENGE: You have a very large collection of 4-ounce and 7-ounce weights to use on both sides of a pan balance. You can weigh a 3-ounce item by using a 4-ounce weight together with the item on one side and a 7-ounce weight on the other. Which weights can you weigh exactly and which ones can't you weigh exactly?



EXPLORATION: How do your results change if you have 5- and 9-ounce weights? How about other pairs of weights that have no common divisor larger than 1? Can you find any patterns in your data? What would happen if you had three kinds of weights to work with - say 3 ounces, 4 ounces, and 7 ounces?