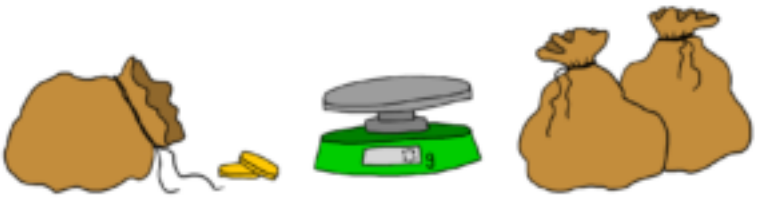
Counterfeit Detective

go figure

It was a dark and stormy night. Private detective Harriet Hesterton had been recruited by her colleague Mahmud Mufti to assist in a case. Some shadowy organization was making counterfeit coins and distributing them to conspiring (or coerced) store owners, who mixed them in with real coins to hide their tracks before giving them as change to customers. Harriet and Mahmud were at what they suspected was one such store.

Harriet had just entered the back room after Mahmud distracted the store owner in conversation. By the light of a single bare bulb in the center of the room, she could see ten hefty bags of coins lined up on one side of the room. One of these, she knew, contained the fake coins; the rest contained real coins. Her goal was to figure out which bag held the counterfeits. But she didn't have much time: Mahmud's distraction wouldn't last long. She pulled out a weighing scale she had hidden under her coat; she would only have time to use it once.



Given that real coins weigh 5 grams and counterfeit coins weigh 4 grams, how can Harriet figure out which bag of coins is fake using just one weighing?