



AUSTRALIAN MATHS TRUST

Maths Challenge
Intermediate: Years 9–10
Practice Problem

I6: Tossing Counters

Ms Smartie told all the students in her class to write four different integers from 1 to 9 on the four faces of two counters, with one number on each face. She then asked them to toss both counters simultaneously many times and write down the sum of the numbers that appeared on the upper faces each time.

I6: Questions

- a. The only sums that Jack was able to get were 8, 9, 10, and 11. Find all five possible combinations of four numbers on the counters.
- b. Jill wrote 4 and 5 on opposite sides of one counter. The only sums she was able to get were three consecutive integers. Find all possible ways the second counter could be numbered.
- c. Ben was only able to get sums that were four consecutive numbers. Show that either one or three of the numbers he wrote on the counters were even.
- d. Show that it is possible to number four counters with 8 different positive integers less than 20, one number on each face, so that the sums that appear are 16 consecutive numbers.