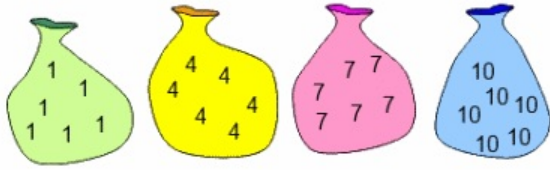


SPECIAL SUMS



Imagine you have four bags containing a large number of 1s, 4s, 7s and 10s.

You can choose numbers from the bags and add them to make different totals. You don't have to use numbers from every bag, and there will always be as many of each number as you need.

Choose some sets of 3 numbers and add them together.

What is special about your answers?

Can you explain what you've noticed?

Why does it happen?

HELP

Start with the easier and simple problem exploring what happens when you add two numbers chosen from bags containing 2s, 4s, 6s and 8s. What happens when you choose 3 numbers from the bags? Can you explain your findings?

NEXT

Work in pairs on the task. Explore what happens if you select four numbers from the bags. Then five, or six, or... Your big challenge will be to discover a rule that determines what is special if you select n numbers from the set of bags for any value of n .

Be prepared to explain to the class what would be special about the total if you added 99 numbers chosen from the bags, then to give the explanation for choosing n numbers. Make sure you can explain your reasoning with reference to the structure of the problem rather than just by spotting a pattern.