



Problem of the Week

Problem B

Does This All Add Up?

In the table shown, the top row and leftmost column are grey, and the remaining numbers form a 3×3 array. Each number in the array is equal to the sum of the numbers in grey in its row and column.

	5	2	7
3	8	5	10
4	9	6	11
6	11	8	13

(a) Follow the steps below.

1. Circle any number in the array (*for example, 6*).
2. Cross off the other numbers in the same row and column of the array.
(*For our example, we would then cross out 9, 11, 5, and 8.*)
3. Circle any remaining number in the array (*for example, 13*).
4. Cross off the other numbers in the same row and column of the array.
(*For our example, we would then cross out 10 and 11.*)
5. Circle the remaining number in the array (*for our example, this is 8*).

What is the sum of the three circled numbers?

- (b) Repeat the steps in part (a) two more times, starting with a different number each time. What do you notice about the sum of the three circled numbers?
- (c) Will your result from (b) be true if we create a 3×3 array using different initial numbers in the grey row and column? Explain why it will be true or give an example where it would not be true.