Extension ideas for the investigation "Tables Without Tens"

The investigation can be extended in a number of ways:

1. Instead of using just the ones try using the digital roots of the tables.
(The digital root is the number you get from 1 - 9 when you add all the digits of a number together.
For example, the digital root of 24 is 6 because 2 + 4 = 6 and of 49 is 4 because 4 + 9 = 13 and 1 + 3 = 4.)

2. Compare the 'table square' with a standard 100 square. (Or one just showing ones!)
How many times does each digit appear in both of these? Explain.

3. What happens when you multiply diagonally opposite corners of a square drawn on a 'table square'? Compare this with the ones-only square.
Does it work with all rectangles or only squares?

4. The same process as the whole of this investigation can be done using a different Modulo such as 6, instead of using Modulo 10 (which is the same as ones only).
A whole lot of new predictions, patterns and reversals arise.

5. Behind this problem is an important kind of arithmetic called 'modular' or 'clock' arithmetic. A search for either of these terms on the NRICH website should yield some interesting problems and articles on this topic.