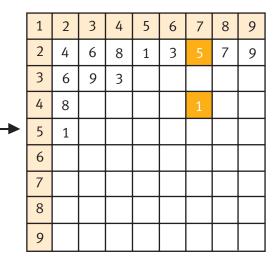# Vedic Digits

You need: square grid paper

ACTIVITY

1. Alison makes a multiplication grid and then a Vedic grid. (Vedic is an ancient mathematical system from India that was used to explore number patterns.)

She changes each two-digit number in her multiplication grid into a Vedic digit by adding the digits in the number. For example, the number 14 becomes Vedic digit 5 because $1 + 4 = 5$. The number 28 becomes Vedic digit 1 like this:

$$28 \longrightarrow 2 + 8 \longrightarrow 10 \longrightarrow 1 + 0 \longrightarrow 1$$

Multiplication Grid

	1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12						
4	8					28			
5	10								
6									
7									
8									
9									

Vedic Grid

	1	2	3	4	5	6	7	8	9
2	4	6	8	1	3	5	7	9
3	6	9	3						
4	8					1			
5	1								
6									
7									
8									
9									

Copy and complete the multiplication grid and then the Vedic grid.

2. **a.** **i.** Circle the numbers in your multiplication grid that become the Vedic digits 3, 6, or 9.
   ii. Which rows or columns are your circled numbers in?
   iii. Write a rule using Vedic digits to identify multiples of 9.
   iv. Write a rule using Vedic digits to identify multiples of 3.

   b. Alison notices that multiples of 6 are all even numbers but multiples of 3 can be even or odd numbers. Write a rule to identify multiples of 6.

3. **a.** Make the Vedic digits for these numbers and work out which are multiples of 9, which are multiples of 3, and which are multiples of 6:
   i. 5 472
   ii. 7 458
   iii. 897 543
   iv. 12 876

   b. Find the missing digit to make each number a multiple of 9:
   i. 86❑
   ii. 96 ❑21

   c. Find the missing digit to make 1 6❑7 a multiple of 3. (There are three possible answers.)

Investigating number patterns