

ACTIVITIES 1.1 – 1.12

Notes and Solutions

Notes and solutions are given only where appropriate.

- 1.3** 1. (a) 9, 6889, 29929, 253009
(b) 81, 361, 43681, 488601

2. Last digit is always either 9 or 1.

4.	n	0	1	2	3	4	5	6	7	8	9
	Last digit of n^2	0	1	4	9	6	5	6	9	4	1

Extension (a) 0, 1, 5, 6 (b) 2, 3, 7, 8

- 1.4** 1. (a) 7 (b) 6

2. $2 \times 3 \Rightarrow$ (a) 4 (b) 3 $3 \times 4 \Rightarrow$ (a) 6 (b) 5
 $2 \times 4 \Rightarrow$ (a) 4 (b) 3 $3 \times 6 \Rightarrow$ (a) 6 (b) 5
 $2 \times 5 \Rightarrow$ (a) 6 (b) 5 $3 \times 5 \Rightarrow$ (a) 9 (b) 8

3. (a) $m + n -$ (highest common factors of m and n)
 (b) $m + n -$ (highest common factors of m and n) $- 1$

- 1.5** 1. She always misses out half the stones.

2. When n and 14 are coprime

3. If m is the number of stones, then she will hop on each step when m and n are coprime

- 1.7** 5. All numbers not crossed out are prime numbers.

- 1.8** 1. (a) 100, 1000, 10 000 2, $4^2 = 1024$

3. (a) m, m^2, m^n

- 1.10** 1. 2^{63} 2. $\pounds 9.22 \times 10^{16}$

3. 9.22×10^{12} km.

- 1.11** The key to generalisation is whether $a > b$, $a > 1$ or $b > 1$.