

First name: _____ Last name: _____

Student ID: _____

Counting and Patterns

Basic problems

1. Find the missing term in each pattern.

1. 27281, 27272, 3409, 3400, _____, 416, 52,	2. 4, 5, _____, 14, 23, 37, 60, 97
3. 16, 15, 32, 13, 64, 11, _____, 9	4. 117, 98, 79, _____, 41, 22, 3
5. 1, 8, 4, 11, 7, 14, 10, _____	6. 291, 286, _____, 138, 69, 64, 32, 27

2. Find the arithmetic sum. Show steps.

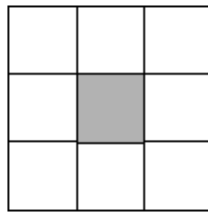
a) 5, 10, 15, 20, ..., 70	b) 2, 4, 6, ..., 96
c) 15, 18, 21, ..., 48	d) -12, -10, -8, ..., 40

3. Find the last digits of the following numbers.

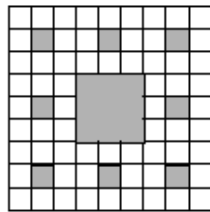
a) 5^{95}	b) 3^{1993}
c) 7^{15}	d) 9^{99}

9. How many two-digit numbers are there for which both of the digits are even?

10. To create the first stage of the pattern below, the large square was divided into nine equal squares and the center square was shaded. To create the second stage, each white square was subdivided into nine equal squares and the center square was shaded. If the process is continued, what will be the total number of shaded squares in the third stage?



First Stage



Second Stage

11. What is the tens digit in $\sqrt{8200}$?

12. The integers are arranged in five columns as follows. If this pattern is continued, in which column will the number 98 be found?

<i>L</i>	<i>M</i>	<i>N</i>	<i>O</i>	<i>P</i>
2	3	4		
		7	6	5
8	9	10		
		11	12	13
14	15	16		
.....				