Student Name: _____

Please write your name on *every* page.

3 Section C

C1
Leo climbs a staircase with 8 steps. With each stride he climbs either 1 step or 2 steps. How many different ways can he reach the top?

Answer to C1: _____

C2
A baker makes 4 straight cuts across a round cake. Every cut crosses every other cut, and no three cuts pass through one point. Into how many pieces is the cake cut?

Answer to C2: _____

C3
Six different numbers are chosen from 1 to 10. No matter which six numbers are chosen, two of them add up to the same total. What is that total?

Answer to C3: _____

C4
A video game has four levels. The fourth level only unlocks after you have beaten the first two levels. In how many different orders can you beat the four levels?

Answer to C4: _____

C5
A certain keyboard's highest note is 1760 Hz, and its lowest is 27.5 Hz. If the frequency (Hz) of a note doubles per octave higher, and an octave is 12 keys wide (i.e. the 1st and 13th key would form an octave), how many keys does the keyboard have?

Answer to C5: _____

Student Name: _____

Please write your name on *every* page.

C6

Rani is giving out Halloween candy to each of her 7 friends Ari, Brandon, Cam, David, Elbert, Francine, and Gemma. She has 60 pieces of candy to give out, and she does not want any of her friends to have two or more extra pieces of candy compared to any other friend. How many different ways can she give out the candy to her friends?

Answer to C6: _____

C7

Rachelle divides the number 2026 by each of the numbers 1 through 9 and records the remainder of each division. She then multiplies all non-zero remainders together to form a new number. She then repeats this process with the new number to get another new number, and so forth, until she reaches a one digit number. What is that number?

Answer to C7: _____

C8

On a planet called Htrae, alien children learn SAMDEB instead of BEDMAS. That is, when they perform calculations, their order of operations is subtraction and addition, then division and multiplication, then exponents, and finally, expressions entirely inside brackets. For example, $3 \times 3 + (4 - 2 \times 6) = 3 \times (7 - 2 \times 6) = (21 - 2 \times 6) = (19 \times 6) = 114$ to the alien children. The alien teacher gives the children the problem

$$5 - 2 \times (8 \times 2 + 6 \div 4)$$

to solve. What is the correct answer on Htrae?

Answer to C8: _____