Write your answers in the Blue Book. Print your names & write the number of students taking this test in the upper right corner of the Blue Book. Put this test & the Blue Book in the provided envelope.

1. KenKen is a popular new math puzzle and here is one for you to solve. The rules are as follows:
   - ☞ Each square in the puzzle below is filled in with one of the digits $1, 2, 3, 4$.
   - ☞ Each digit occurs exactly once in each row and exactly once in each column.
   - ☞ The numbers in each heavily outlined set of squares, called "cages," must combine (in any order) to produce the number in the top corner, using the mathematical operation indicated.
   - ☞ A number can be repeated within a cage as long as it is not in the same row or column.
   - ☞ At the back of the test, another copy of the puzzle appears. Use that copy to do your work, use the copy below just for your answer, but submit everything.

24×		**6**×	
	12×	**3**+	
2÷			**1**−
	3−		

Figure 1: Do your work on the other copy, use the above just for your answer. Submit both pages.

2. The tens digit of a two-digit number exceeds the units digit by 3. If the order of the digits is reversed, the new number is one less than half the original number. Find the two numbers.

3. Charlie ate several pieces of candy on Halloween. Each day after Halloween he ate six fewer pieces than the day before. His candy lasted exactly five days, and he ate 100 pieces of candy in total. How many did he eat on the third day?

4. A cube is painted yellow on all sides, and then it is sliced up to make 125 equal smaller cubes. How many of these smaller cubes have paint on at least two sides? How many have paint on at least one side?

5. How many scalene triangles have perimeter of length ≤ 12, where the length of each side is an integer? (A triangle is *scalene* if no two sides have the same length.)

24×		**6**×	
	12×	**3**+	
2÷			**1**−
	3−		

Figure 2: Use the above to figure out the answer, but be sure to record your answer on the front page also. Submit both pages.