This round has a set of fun puzzles for your team to solve. The round is worth 10 points in total.

1 Ken Ken

Ken Ken consists of an nxn grid of squares, where each column and each row must contain each integer from 1 to n exactly once. In addition, within a shaded set of boxes, the numbers you place in those boxes should give the small number at the top left when the noted operation is applied to them (note that for subtraction and division, the 2 numbers in the shaded set of boxes can be in either order). An example is shown below:

Solve the following Ken-Ken puzzles. On the answer sheets, enter the sum of the upper left to lower right diagonals.
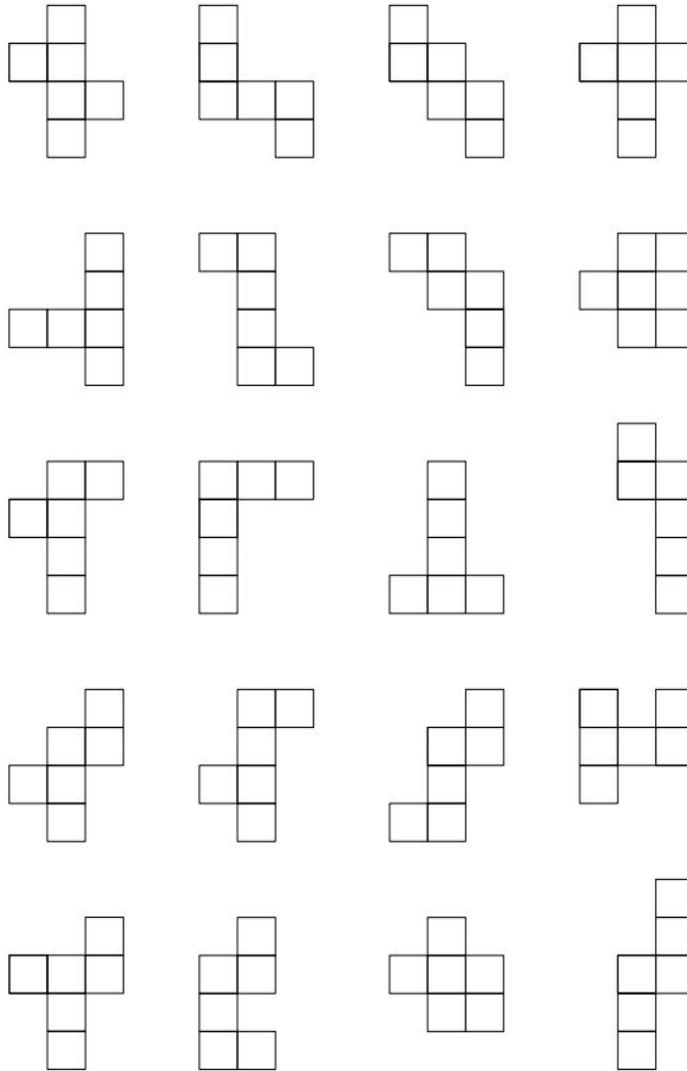
1. 3x3

2. 4x4

3. 5x5

2   Cube Nets

Find all of the nets below that can be folded to make a cube. When entering your answers, enter them as numbers, where the top left net is 1, and the nets are numbered sequentially left to right, top to bottom.

3 Kakuro

To object of this puzzle is to place the integers from 1 to 9 in the boxes such that their sums across a row or column are equal to the number indicated. Sums in the upper right half of a square are row sums, and those in the lower left are column sums. In addition, you're not allowed to place 2 of the same integers in a row or column unless they're separated by a shaded box. An example is shown below:

1. Solve the following Kakuro puzzle. On your answer sheet, enter the number of odd numbers among the numbers you fill in.

4 A Simple Multiple Choice Test

Find the answers to the following questions. One point will be awarded for each correct answer.

1. What is the number A's, C's, and E's among the answers?

   A 1
   B 2
   C 3
   D 4
   E 5

2. Assume A, B, C, D, and E have numerical values of 1, 2, 3, 4, and 5, respectively. What is the sum of all of the answers?

   A 13
   B 15
   C 17
   D 19
   E 21

3. What is the first problem in which C is the answer?

   A 1
   B 2
   C 3
   D 4
   E 5

4. What is the sum of the answers to the odd-numbered problems?

   A 0
   B 1
   C 2
   D 3
   E 6

5. What is the answer to this question?

   A A
   B B
   C C
   D D
   E E

6. Which problems have the same answer?

   A 1 and 3
   B 2 and 4
   C 3 and 5
   D 2 and 6
   E 4 and 6

5 Sequence Reconstruction

For the following problem, A, B, C, D, and E are distinct real numbers, and conditions are given as to their order. Your job is to find the order of the 5 numbers, from least to greatest.

1. $A < E$ or $D < B$

2. $B < D$ or $B < C$

3. $A < B$ and $B < D$

4. $A > D$ or $D < C$

5. E is the second smallest number.

6 Superdoku

A superdoku is an extended version of a sudoku. Not only do the 9 numbers in each row, column, and 3x3 box have to be different, but so do the 9 numbers at the same positions in the 9 boxes. E.g., the numbers in the top left corners of each box must all be different. An example is shown below:

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

Solve the following Superdoku, where some of the numbers have already been filled in. On your answer sheet, enter the sum of the entries on the lower left to upper right diagonal.

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

7   Logic Puzzles

1. There is a bridge that goes from East to West. You are walking across the bridge from East to West, and you are currently two thirds of the way across. Suddenly, you see a train approaching from the West going at 60 kilometers per hour. You, being very good at observation and arithmetic, deduce that you can just barely escape being hit by the train by running toward either end of the bridge. What is your running speed?

2. Find a 10 digit number where the first digit is the number of 0's in the number, the 2nd digit is the number of 1's in the number, etc., and the last digit is the number of 9's in the number.