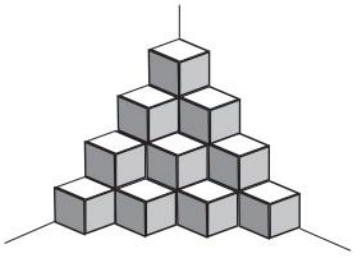
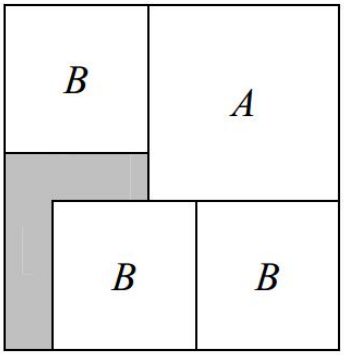
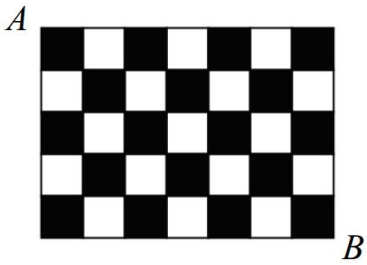
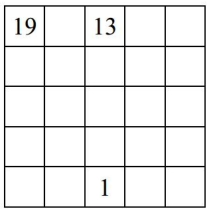
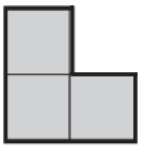
MINI MOCK TEST

Duration: 60 minutes

P1	A digital clock shows 2:35. This is the first time after midnight when all three digits are different prime numbers. What is the last time before noon when all three digits on the clock are different prime numbers?
P2	The tower shown is made of congruent cubes stacked on top of each other. Some of the cubes are not visible. How many cubes in all are used to form the tower? 
P3	Going at the average speed of 40 km per hour, we will be 1 hour late. Going at the average speed of 60 km per hour, we will be 1 hour early. At what average speed, in km per hour, should we go in order to arrive just in time?
P4	What is the largest six-digit number, $\overline{x2014y}$, that is divisible by 33?
P5	As shown in the diagram, a square floor has been paved partially with two types of square tiles, A and B, of respective areas 1600 cm^2 and 900 cm^2. How many square tiles of area 100 cm^2 are required to pave the remaining (shaded) part of the floor?

	
P6	Every two of A, B and C play one game against each other, scoring 2 points for a win, 1 point for a draw and 0 points for a loss. How many different pairs of numbers are there such that the first is A's total score and the second is B's total score?
P7	In the correct addition below, each letter stands for a digit. What is the value of the sum $A+10B+C+D+E+F$? $\begin{array}{cccc} & A & 2 & E \\ & 1 & B & D \\ + & F & 2 & C \\ \hline & 6 & 3 & 2 \end{array}$
P8	As shown in the diagram, a 5×7 grid is painted in checkerboard fashion, The length of the side of each square is 1 cm. An ant, starting from A at the top left corner, crawls along the grid lines to B at the bottom right corner. If during its movement, a black square is always on the left side of the ant, what is the minimum distance, in cm, the ant must crawl?

	
P9	The factorial of a positive integer n, denoted by $n!$, is the product of all positive integers from 1 to n inclusive. Thus $5!=1 \times 2 \times 3 \times 4 \times 5$. Find the largest three-digit number which is equal to the sum of the factorials of its three digits.
P10	What is the largest possible remainder when a two-digit number is divided by the sum of its digits?
P11	Among the positive integers between 1000 and 10000, how many multiples of 9 are there such that the sum of the first two digits is equal to the sum of the last two digits?
P12	The numbers 1, 2, . . . , 25 are to be placed in a 5×5 table, with one number exactly in each square. Consecutive numbers occupy squares with a common side. Three of the numbers have been placed, as shown in the diagram below. Find the number of different placements of the other 22 numbers. 
P13	The only way that 10 can be written as the sum of 4 different counting numbers is $1 + 2 + 3 + 4$. In how many different ways can 15 be written as the sum of 4 different counting numbers?

P14	The L-shape pictured is formed from three squares, each 1 cm on a side. Five of these L-shapes are placed next to each other to form a figure. What is the least possible perimeter of the figure they form, in cm? 
P15	ABC is an equilateral triangle of side length 4 cm. D is a point on AC such that BD is perpendicular to AC, and E is a point on CB such that DE is perpendicular to CB. What is the area, in cm2, of a square whose side length is DE?