Po Leung Kuk

19th Primary Mathematics World Contest

Team Contest 2016

Team: _____

Question 1

The table below must be filled with positive integers. The first row and column have been filled in. Complete the table such that the sum of the four numbers in each 2×2 grid is the smallest possible perfect square number. For example: the value of x is 4 since $1 + 2 + 2 + x = 9$.

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

Answer:

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

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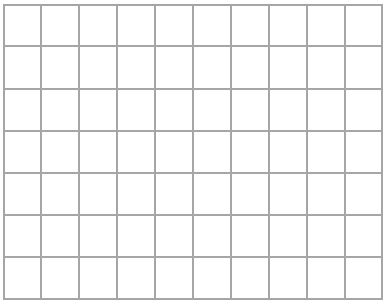
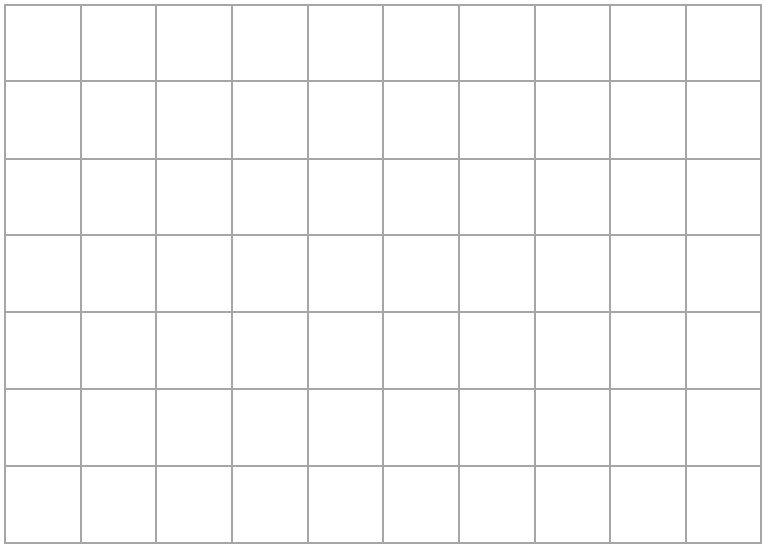
Question 2

Divide the 7 × 10 rectangle below into exactly eight non-overlapping squares which are not necessarily the same size.



Answer:



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Question 3

Let A = $1 \times 3 \times 5 \times 7 + 3 \times 5 \times 7 \times 9 + 5 \times 7 \times 9 \times 11 + \ldots + 2009 \times 2011 \times 2013 \times 2015 + 2011 \times 2013 \times 2015 \times 2017$. What is the units digit of A?

Answer : _____

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Question 4

How many 3-digit numbers can be added to 2016 such that the result is a perfect square?

Answer : _____

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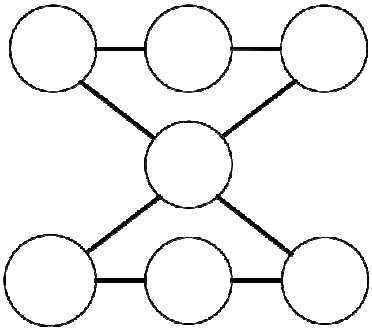
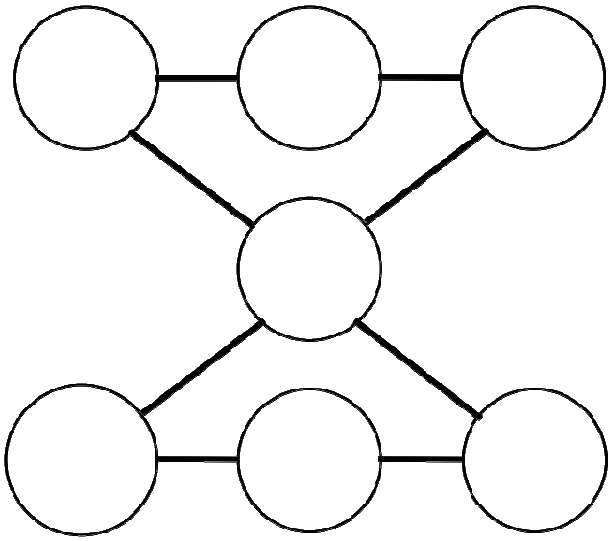
Question 5

Place all the prime numbers between 4 and 25 into the circles below such that each row and diagonal adds up to the same prime number.



Answer:



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Question 6

The areas of three different faces of a rectangular prism are in the ratio 2 : 3 : 5 and the total length of all edges is equal to 124 cm. Find the volume of the rectangular prism, in cm^3.

Answer : _____ cm^3

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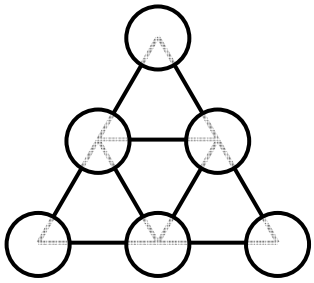
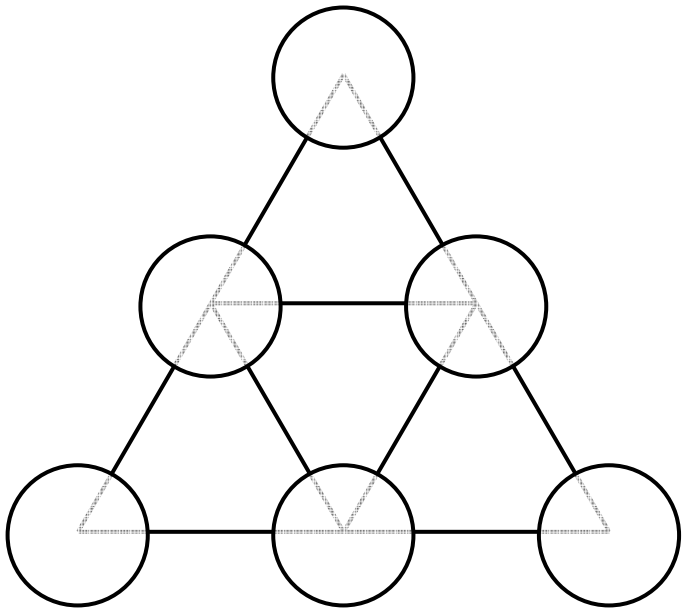
Question 7

In the circles below place six different numbers from 1, 2, 3, 4, 5, 6 and 7 such that in each of the four small triangles of the same size two of the numbers add up to the third number. Which number will not be used?



Answer:



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Question 8

The 2-digit number $\overline{ab}$ is such that the 4-digit number $\overline{ab}\,\overline{ab}$ has exactly 8 divisors and the 4-digit number $\overline{ba}\,\overline{ba}$ has exactly 6 divisors. Find the 2-digit number $\overline{ab}$.

Answer : _____

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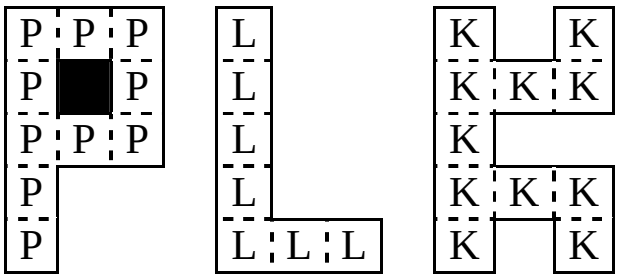
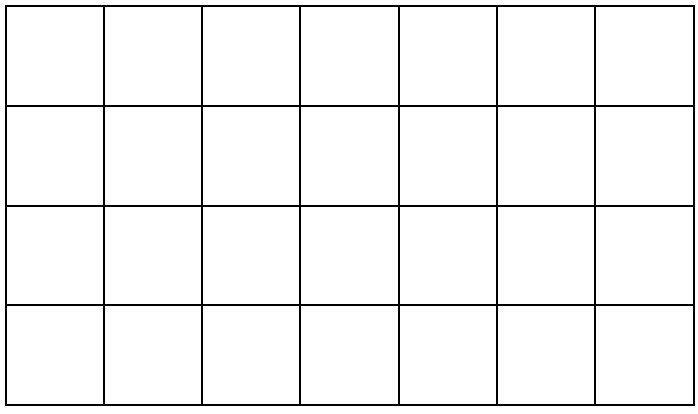
Question 9

Cut the following three pieces such that there will be six pieces altogether, and fit them into a 4×7 rectangle. The pieces may be rotated but not reflected.



Answer:



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Question 10

P, *L* and *K* are 3 distinct two-digit prime numbers such that the average of any two of them is a prime number. Moreover, the average of *P*, *L* and *K* is also a prime number. What are the values of *P*, *L* and *K*?

Answer : *P*=_____ *L*=_____ *K*=_____