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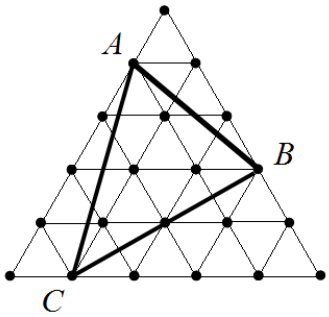
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18th Primary Mathematics World Contest
Individual Contest 2015

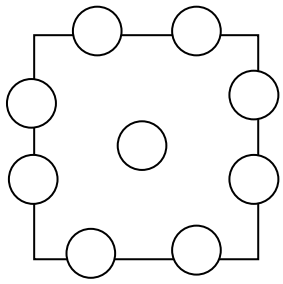
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1. In the figure below, the large equilateral triangle is formed by 25 smaller equilateral triangles each with an area of 1 cm^2. What is the area of triangle *ABC*, in cm^2?



2. Calculate
$(6+7+8-9-10)+(11+12+13-14-15)+(16+17+18-19-20)+\cdots$
$+(2006+2007+2008-2009-2010)+(2011+2012+2013-2014-2015)$
= _____

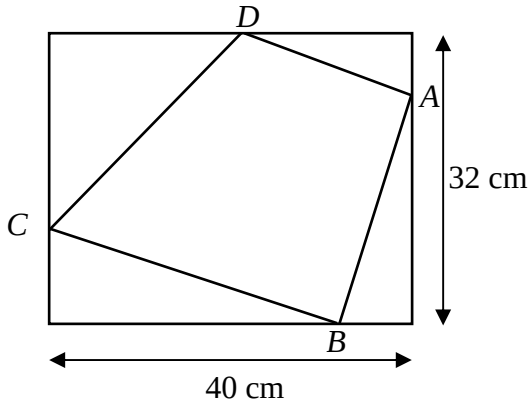
3. Each of the numbers from 1 to 9 is placed, one per circle, into the figure shown. The sum along each of the 4 sides is the same. How many different numbers can be placed in the middle circle to satisfy these conditions?



4. N is a positive integer and $N!$ = $N\times(N-1)\times(N-2)\times\cdots\times3\times2\times1$. How many 0's are there at the end of the simplified value of $\frac{2015!}{1997!}$?

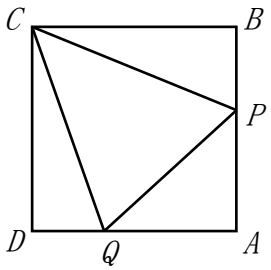
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5. The dimensions of the rectangle are 32 cm by 40 cm as shown below, with points *A*, *B*, *C* and *D* on its four sides. Point *C* is 20 cm lower than point *A*. Point *D* is 8 cm to the left of point *B*. What is the area of the quadrilateral *ABCD*?



6. Mary writes down a three-digit number. William copies her number twice in a row to form a six-digit number. When William's number is divided by the square of Mary's number, the answer is an integer. What is the value of this integer?

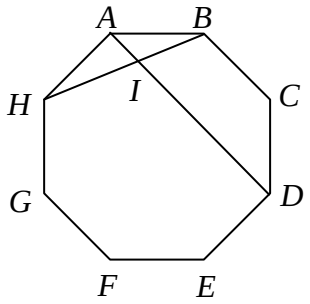
7. In the figure below, square *ABCD* has a side length of 1 cm. *P* is a point on Side *AB* and *Q* is a point on Side *AD*. The perimeter of triangle *APQ* is 2 cm. What is the size of $\angle PCQ$ in degrees?



Po Leung Kuk
18th Primary Mathematics World Contest
Individual Contest 2015

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8. The figure below is a regular octagon *ABCDEFGH*. The diagonals *AD* and *BH* intersect at point *I*. Calculate the size of $\angle BID$, in degrees.



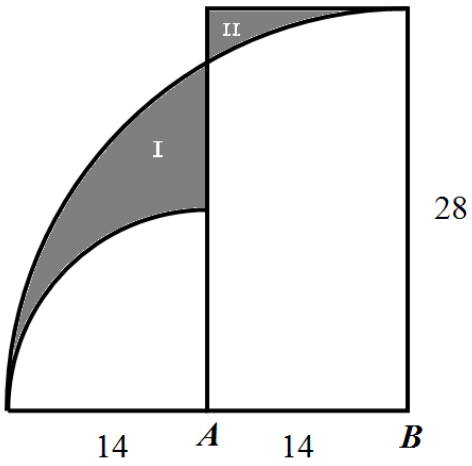
9. *A*, *B*, *C* and *D* are four distinct positive integers such that $A \times B \times C \times D = 2709$. Find the difference between the maximum and minimum values of $A + B + C + D$?

10. Find the largest number that is less than 2015 which is divisible by 35 and the sum of its digits is 18.

11. On a particular bus line, between Station A and Station J, there are 8 other stations. Two types of buses, Express and Regular, are used. The speed of an Express bus is 1.2 times that of a Regular bus. Regular buses stop at every station, while Express buses stop only once. A bus stops for 3 minutes. On a particular day, a Regular bus departed from Station A. 40 minutes later an Express bus departed from the same station. The two buses arrived at Station J at the same time. How long did the Express bus take from Station A to Station J?

Po Leung Kuk
18th Primary Mathematics World Contest
Individual Contest 2015

12. In the figure below, *A* and *B* are the centres of two quarter-circles of radii 14 cm and 28 cm, respectively. Find the difference between the areas of region **I** and **II** in cm^2. (Use $\pi = \frac{22}{7}$)



13. The Lowest Common Multiple of three numbers is 2015 times the Greatest Common Divisor, greater than 1, of these three numbers. What is the smallest sum that these three numbers can have?

14. The number $\frac{2015}{2^{2015}}$ is represented as a decimal number. What is the fourth digit from the end?

15. How many 10-digit numbers are there such that the product of its digits is equal to 2^{27}?