PIMS Elementary Grades Math Competition NAME: _____
27 April 2019
Target Round - Grade Six Division SCHOOL: _____
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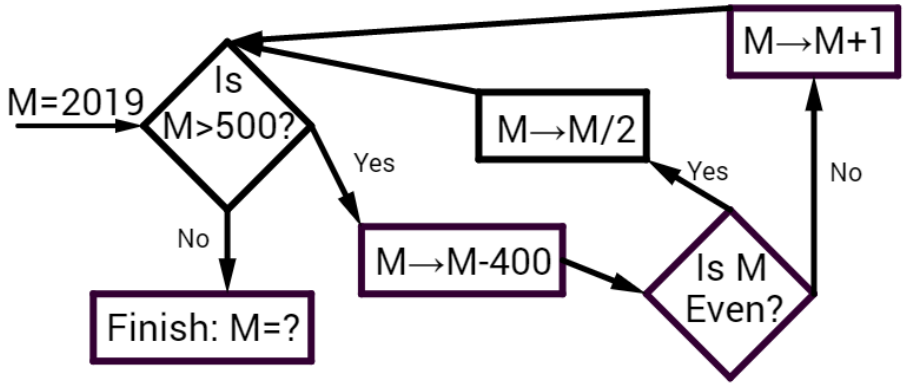
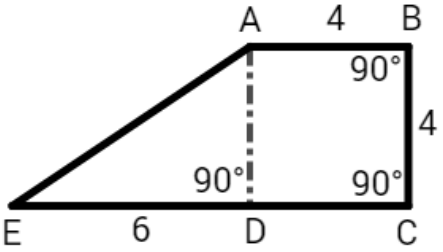
1. The input to the flow chart below is M=2019.
What is the value of M that is stored at the "Finish" box?

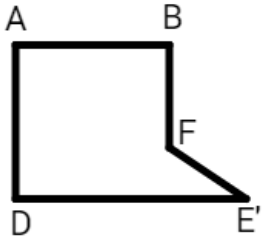


_____ 1

2. 2 bags of sugar and 3 bags of flour cost 64 dollars.
4 bags of sugar and 5 bags of flour cost 114 dollars.
What is the cost (in dollars) of 5 bags of sugar and 4 bags of flour? _____($) 2

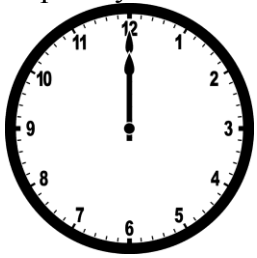
3. A piece of paper is in the shape of a trapezoid $ABCE$ with $AB = BC = 4$, and $\measuredangle ABC = \measuredangle BCE = 90°$ (left figure). D is on CE, $DE = 6$, and ΔADE is a right triangle, ($\measuredangle ADE = 90°$).
The dotted line AD is a folding line and the paper is folded along that line to form a new shape $ABFE'D$ (right figure).
What is the area of $ABFE'D$?
Express the answer as a fraction in lowest terms.





_____ 3

4. Consider the classic mechanical clock below. As shown, at exactly 12 o'clock (time of 12 hours and 0.00 minutes), the hour hand and the minute hand overlap. They also overlap at some other times. One of these times is between 2 o'clock and 3 o'clock. How many minutes past the time of 2 o'clock (time of 2 hours and 0.00 minutes) do they overlap?
Express your answer correct to 2 decimal places.

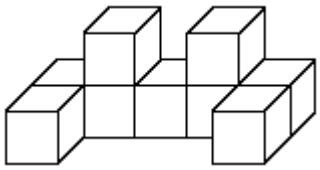


_____(m) 4

5. What is the largest perfect square smaller than 2019? _____ 5

6. What is the surface area (in cm^2) of a pyramid with square base of side $6cm$, and with height $4cm$? _____(cm^2) 6

7. The solid body consists of 9 cubes of side 2 glued together. If, prior to gluing, 5 of the cubes were painted blue and 4 were painted red, what is the maximum possible visible red area?



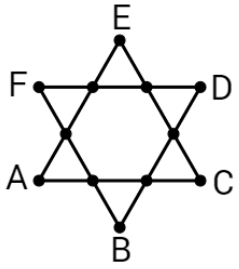
_____ 7

8. How many factors of 28800 are not perfect squares? Note that 1 and N are factors of N. _____ 8

9. Parents and their kids participated at the barbeque party.
Each parent ate 3 sausages, and each kid ate 2 sausages.
In total, 100 people ate 255 sausages. How many parents were there? _____ 9

10. The 5-digit number $905a6$ is divisible by 36.
Find the value of the digit a. _____ 10

11. The schematic diagram of the map of 6 train lines in a city is in the shape of a Star of David (see figure below).
A, B, C, D, E, F are the beginning and ending stops of each of the lines.
Each train line consists of 3 distinct segments between 4 stations located on a straight line (stations are located at the intersection points of the train lines, and each station is shared by 2 train lines).
The distance of each segment between adjacent stations is $1km$.
You travel from A to D (opposite locations on the star), and you visit all the 12 stations on the way.
What is the minimum distance travelled (in km) ?



_____(km) 11

12. Box A has 4 beads, Box B has 5 beads, Box C has 6 beads, and Box D has 7 beads. Johnny chooses a box at random, takes one bead from the box that he chose and puts it into another box.
What is the probability that boxes A and B have the same number of beads? _____ 12