

1. Find the last digit of $7^{2019^{2019}} + 2^{2020}$.
2. How many positive integers that can divide $2 \times (2019)^{199}$
3. Calculate $\frac{1}{3} \times \frac{1}{6} + \frac{1}{6} \times \frac{1}{9} + \dots + \frac{1}{2016} \times \frac{1}{2019}$

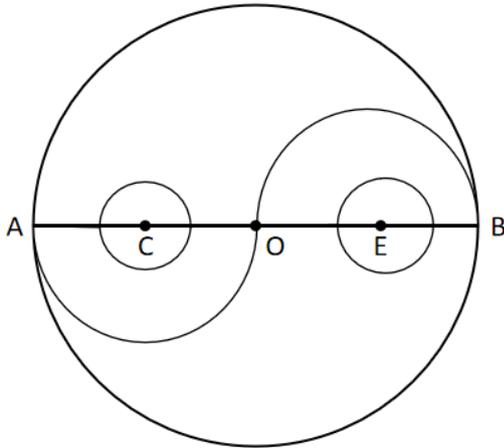
4. How many digits does N have if $N = 369121518 \dots \dots 20162019$?

5. $N = 1 + 111 + 11111 + \dots + \underbrace{11 \dots 11}_{2019}$. Find the sum of the last 5 digits of N .

6. $A_1, A_2, A_3, A_4 \dots A_9$ are nine fractions between $\frac{1}{5}$ and $\frac{1}{2}$, including $\frac{1}{5}$ and $\frac{1}{2}$, there are eleven fraction difference between any two successive fractions is constant. What is the sum of eleven fractions?

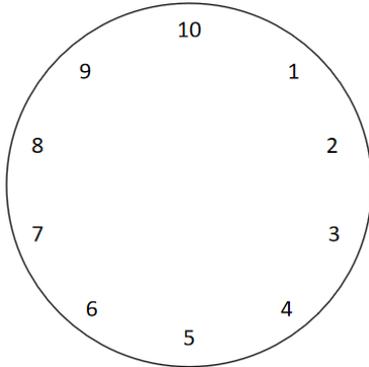
<https://kangaroo.study>

7. In the figure below, the three circles whose centers are O , C , E and their diameters are 16, 4, and 6 respectively. Find the ratio of the shaded area to the unshaded area.



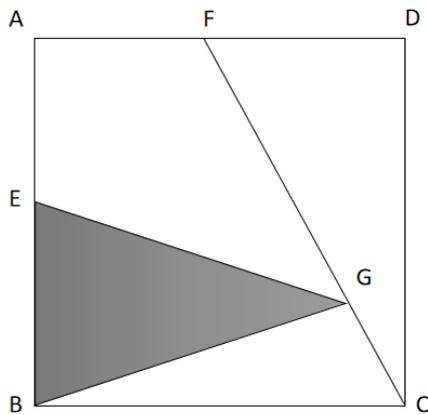
8. Arrangement of ORDERED begin and end with same letter.

9.



Assume there is 10 hours a day, every hour has 100 minutes. Find the angle formed at 6:75 min.

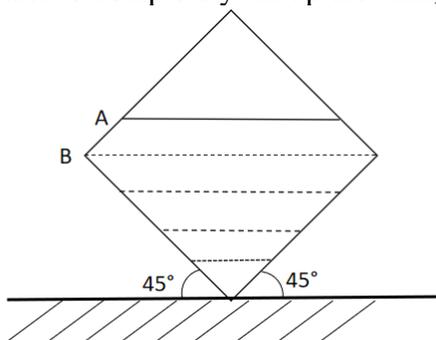
10. The area of square $ABCD$ is 16 cm^2 , $AE=BE$, $AF=FD$, $FG:GC=3:2$. Find the area of the shaded region (in cm^2).



11. There are 8 doors and 8 keys. These 8 keys are given to 8 people randomly, with each receiving one key. 5 of them received the right key to open the door. How many ways are there?

12. 2019 people divide into A , B , C , and D . Group A is $1\frac{1}{3}$ times of Group B and $83\frac{1}{3}\%$ of Group C . Find the least possible number of people in Group D ?

13. A tank in the shape of a cube of edge 10 m (meter) contains water. If it is turned to a position with an edge lying on the horizontal surface, with two faces inclined at 45° to the horizontal surface, the water will be up to the level indicated by A . The figure shows the front view of the tank. If it needs an additional of 125 m^3 of water to completely fill up the tank, find the length of AB .



14. $4n + 1$ or $6n + 1$ is a perfect square. (n is a whole number but not more than 120),
How many possible of n are there?

15. 1965 cards with number 1, 2, 3, ..., 1965 are put into 655 boxes. Sum of the cards in each box is different and the minimum sum is A . Find the maximum value of A .