

Team \_\_\_\_\_

QUESTION 1

**What is the 725th digit past the decimal point in the expansion of  $1/13$  ?**

**Answer:**

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QUESTION 2

**What is the remainder of  
 $101^{98} - 58^{98}$   
when divided by 43**

**Answer:**

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QUESTION 3

**In a banana plantation there is a row of 39 banana trees,  
In every group of 7 consecutive banana trees there are 1300 bananas  
In this total row of trees there are 7415 bananas. How many bananas are there in  
Total in tree numbers 19,20,21 ?**

**Answer:**

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QUESTION 4

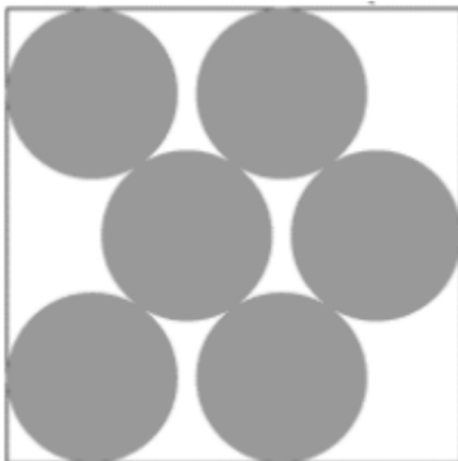
An ostrich runs alongside a slow moving cargo train;  
When it runs in the same direction as the train it takes 490 steps  
From the end to the front of the train.  
Then it turns around and runs in the opposite direction taking 70 steps  
From the front to the end of the train.  
If the running stride length of the ostrich is 3 metres, how long is the train ?

Answer:

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QUESTION 5

What is the side length of the square box  
shown if the radii of the circles are all 1 cm ?



Answer:

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QUESTION 6



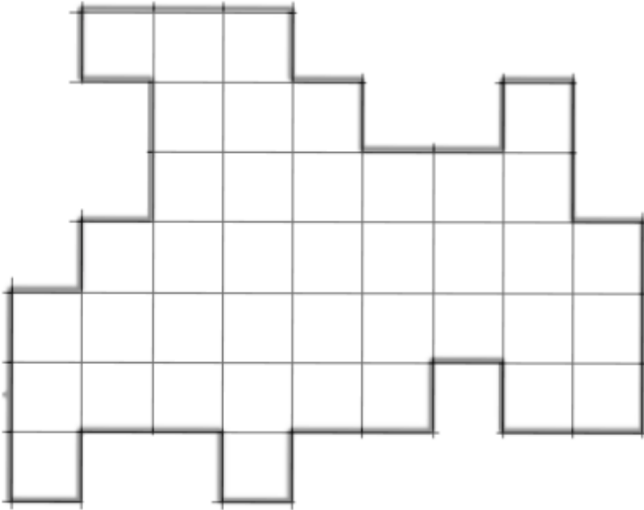
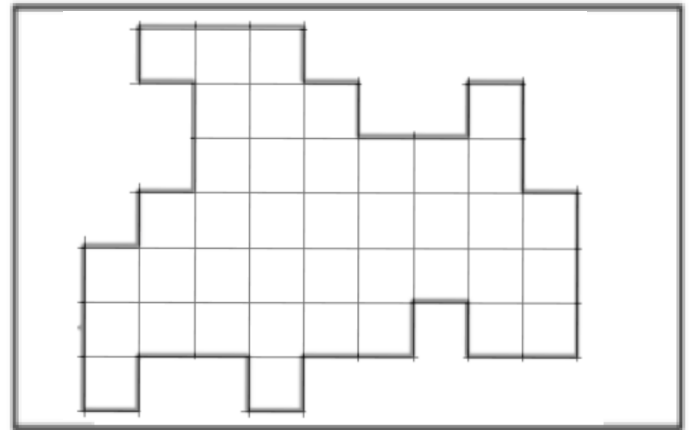
An earthquake has damaged the clock face of the tower.  
The long arm and the short arm of the clock are still  
hanging on the clock, but they are disconnected from the centre. One of the arms  
connects the numbers of the clock of 11 and 3, the other arm connects number 1 with  
number 8 on the clock face.  
What is the value of the smaller of the angles that the two arms make when they cross ?

Answer:

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## QUESTION 7

Four siblings have inherited a large plot of land, but they want to divide it into exactly 4 congruent shapes, using the lines of the small squares provided, can you help them ?

**Answer:**

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## QUESTION 8

**In an obtuse triangle  
the centres of the inscribed circle and of the circumscribed circle  
are symmetrical about one of its sides.**

**What is the obtuse angle of this triangle in degrees ?**

**Answer:**


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## QUESTION 9

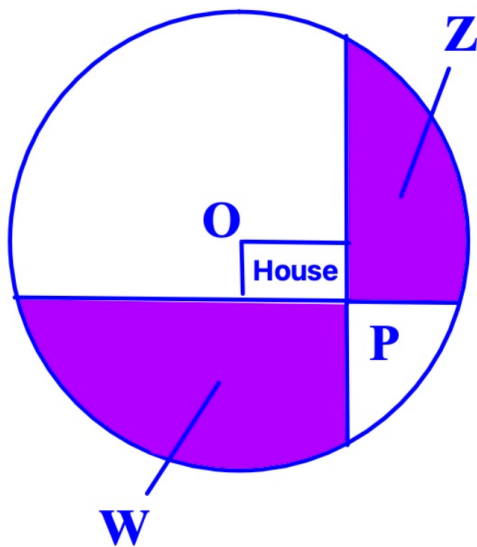
**The sum of the digits of 1920 is 12; the sum of the digits 12 is 3.**

**Which is exactly the number of non-zero digits in the number 1920.**

**How many are the 4 digit numbers within 999 and 9999 which have the same property, meaning their digits are summed until one digit is left and that digit is equal to the number of non-zero digits in the number.**

**Write only the number of all the 3 and 4 non-zero digit numbers which obey this rule.**

**Answer:**



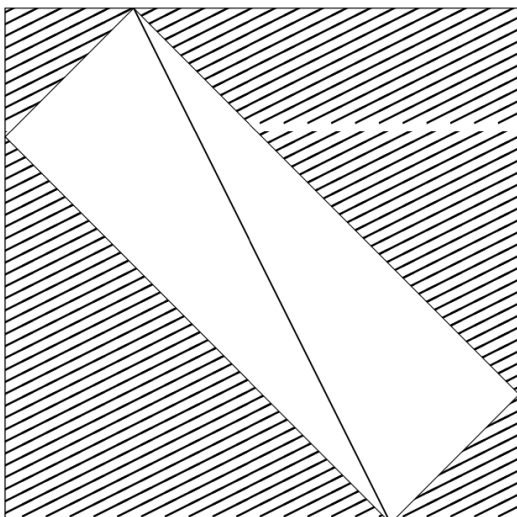
A family owns a house in a circular plot of land of  $4700 \text{ m}^2$ . The house has two diagonally opposite corners of O and P. O is the centre of the circle. P is the point of intersection of the two chords. Areas W and Z have a combined surface of  $1800 \text{ m}^2$ . What is the footprint area of the House ?

Answer:

**5 antennas amongst which 2 are out of order are aligned.**  
**How many possible ways are there to align the antennas so that 2 out of order antennas are never next to one another?**

Answer:

Given a rectangle inscribed in a square, such that all four corners of the rectangle are on a side of the square. The shaded area is  $50 \text{ cm}^2$ . What is the length of a diagonal of the rectangle.



Answer: