1. On the following picture there is a regular pentagon. Inside the pentagon on the side AB is a square. Inside the square is an equilateral tringle BCD. Find the angle $\angle CDE$.
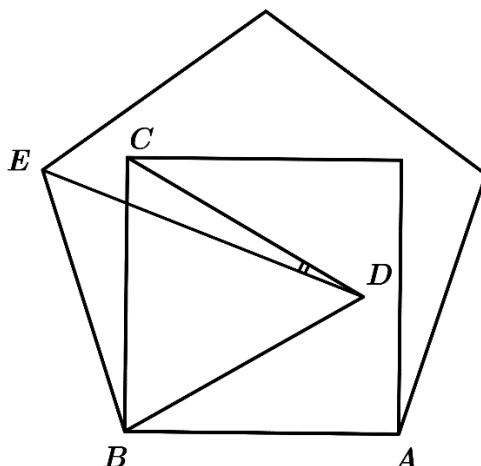
   Note: white the answer in degrees.

2. In the following equality, different letters denote different digits, and identical letter denote identical digits
$$CAT \cdot CAT = CTHAT$$
   Find the number CAT.
   Note: in this problem letters denote digits in 3- and 5-digit numbers.

3. The year 2023 marks the 7th time this Olympiad takes place. Galit noticed, that the current year is divisible by the number of the current Olympiad (2023 is divisible by 7). How many time will such event happen in the future, if the Olympiad would continue to take place once every year, forever?
   Note: this year's occurrence isn't counted as future occurences.

4. The following figure's border consists of circular arcs (one half-circle and the rest – quarter-circles). Find the area of the figure.
   Note: the square grid consists of squares with area of 1 unit.
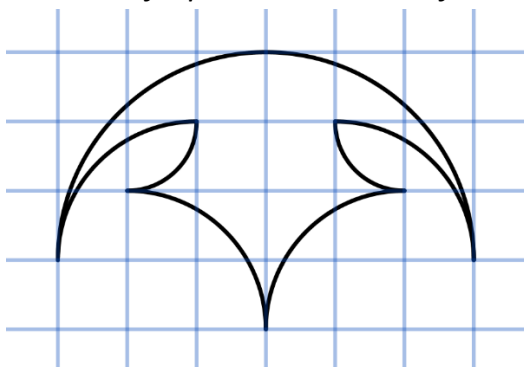
5. A community center has a soccer club, a basketball club and a volleyball club. Each child trains in exactly one club. After a month of training, the following three things happened simultaneously:

    > A third of all the children who trained this month in soccer moved on to volleyball.
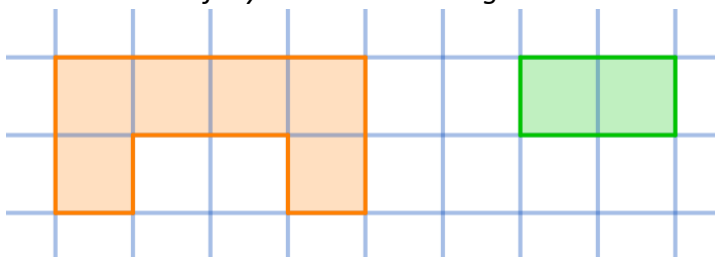
    > A quarter of the children who trained in basketball this month moved on to football.

    > And a fifth of all the children who trained this month in volleyball, moved to basketball.

    As a result, the sizes of all three circles became equal to each other. What is the smallest possible number of children in this community in total?

6. A 6×8 rectangle is tiled by tiles of two kinds: green tiles and orange tiles, whose shapes are shown in the following picture. What is the least possible amount of the green (rectangular) tiles in the tiling?

    Note: you are allowed to rotate the tiles. The tiles must cover the whole rectangle without overlapping, all tiles must be fully inside the rectangle.

<div dir="rtl" align="center">

בהצלחה!

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