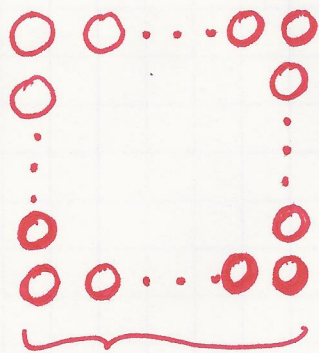


Less than forty identical small balls can be arranged to form a square. These balls can also be arranged to form an equilateral triangle. Find the number of balls. (The number is greater than 1)

Let n represent the number of balls.

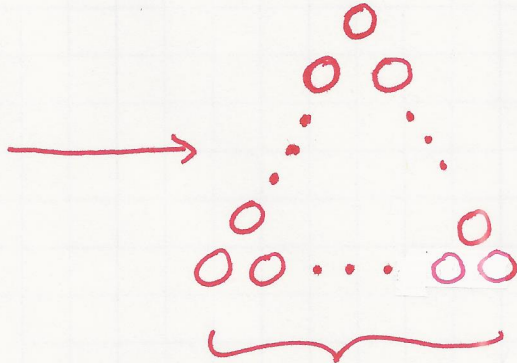
Then $n < 40$.

We can draw a diagram (at least attempt to...)



the number needs to be a perfect square:

$$n = k^2, k \in \mathbb{Z}$$



the number has to be a sum of first few natural numbers (triangular number) of the form $1+2+3+\dots$

Since $n > 1$, $n \geq 4$.

Then $4 \leq n < 40$

Listing perfect squares:

9, 16, 25, 36

Listing triangular numbers:

6, 10, 15, 21, 28, 36

36 is the number common to both lists.