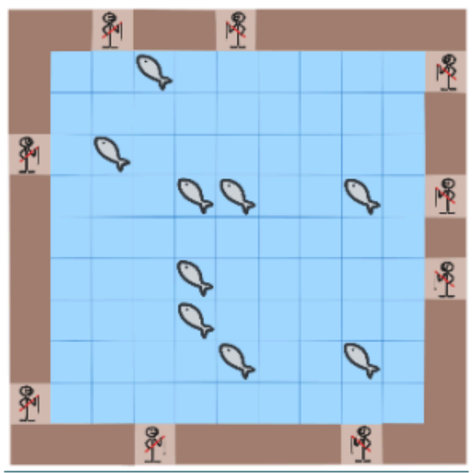
5 points

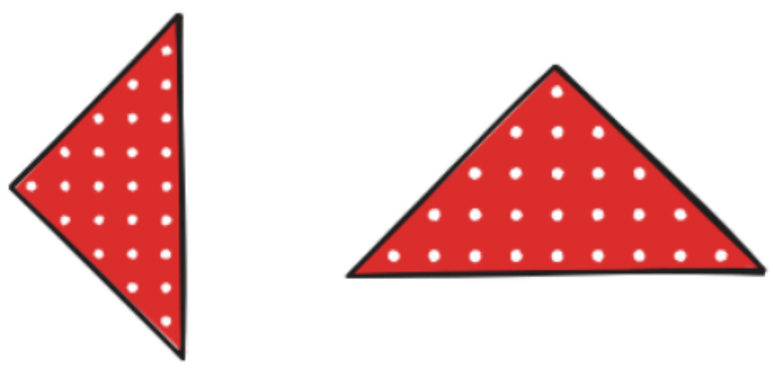
Some anglers are standing around a lake, and each of them has just hooked a fish. We know that everyone caught their fish using 9 units of fishing line, that is, each line passes through 9 tiles, excluding the tile of the angler but including that of the fish. Draw the paths of the fishing lines!



The lines can only pass between tiles with a common side, can not branch, and each tile can only have at most one line passing through.

5 points

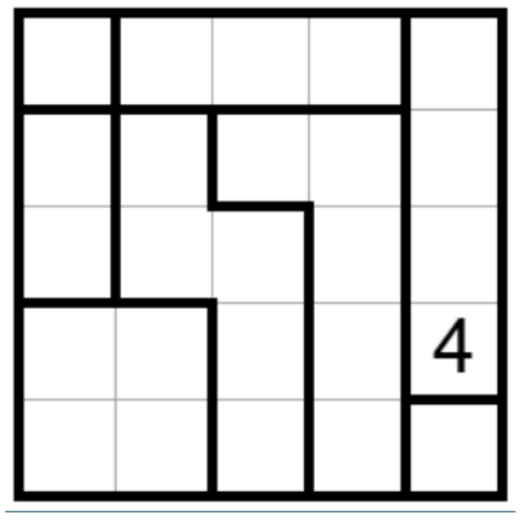
Grandpa Tarkal wants to sew polka-dotted silk scarves for his four granddaughters. He knows that the traditional scarf pattern is shaped like an isosceles right triangle, and each granddaughter needs a different size. However, upon returning home from the fabric store, he is shocked to realize that they misunderstood him and gave him one large quadrilateral piece of fabric. After a brief moment of thought, he slaps his forehead and realizes that he can cut the fabric in such a way that all four scarves can be made from it, without wasting any material!



What might the fabric Tarkal Grandpa brought home have looked like?

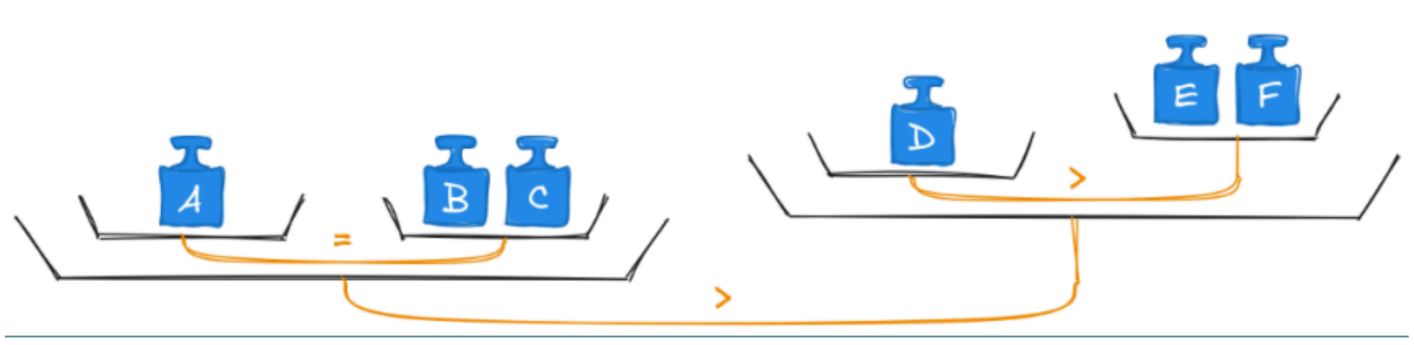
5 points

Consider the grid below divided into regions of various shapes and sizes. Fill in the squares so that each region of size N contains each of the numbers from 1 to N exactly once. You may not write the same number in any two squares that touch, even diagonally.



5 points

On the big balance below, we put two identical balances and weights in their pans. The six weights weigh 1, 2, 3, 4, 5, and 6 grams. Can you figure out which weight was placed in which pan?

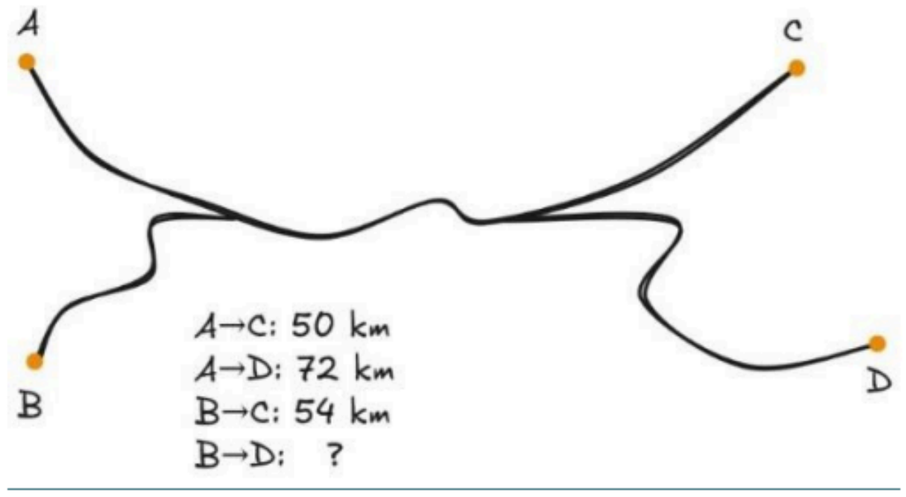


5 points

Molly and Jane each have 10 stamps. Molly wants to give Jane some stamps for her 8th brithday. How many stamps should Molly give to Jane so that Jane has 8 more than Molly. Make a picture!

5 points

A very sketchy map (see below) has been found:



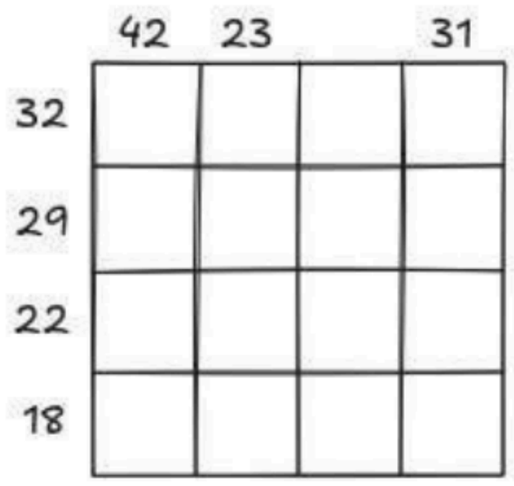
Can we determine the length of the route from B to D?

5 points

Draw a quadrilateral with no parallel sides that can be divided into 4 congruent (identical) triangles!

5 points

In Madagascar, coins of 1, 2, 5, 10, 20, and 50 ariary are in circulation. Place one coin in each cell of the grid so that the numbers in the rows and columns indicate the total value of the coins in that row or column.



5 points

A flock of cranes forms a triangle when flying. At the front, there is one crane. In the next row, there are 2 cranes. In the third row, there are 3 cranes, etc. There are 28 cranes in the flock. How many rows will there be?

$$1+2+3+\ldots+\square=28$$

5 points

Put signs (+ or -) betweens the numbers below to make the equality correct:

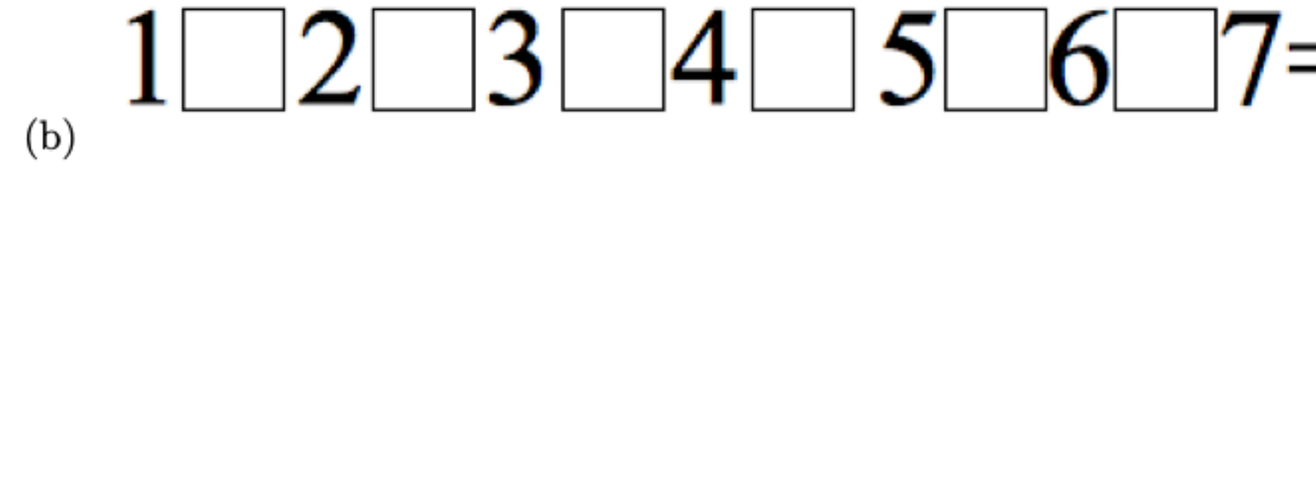
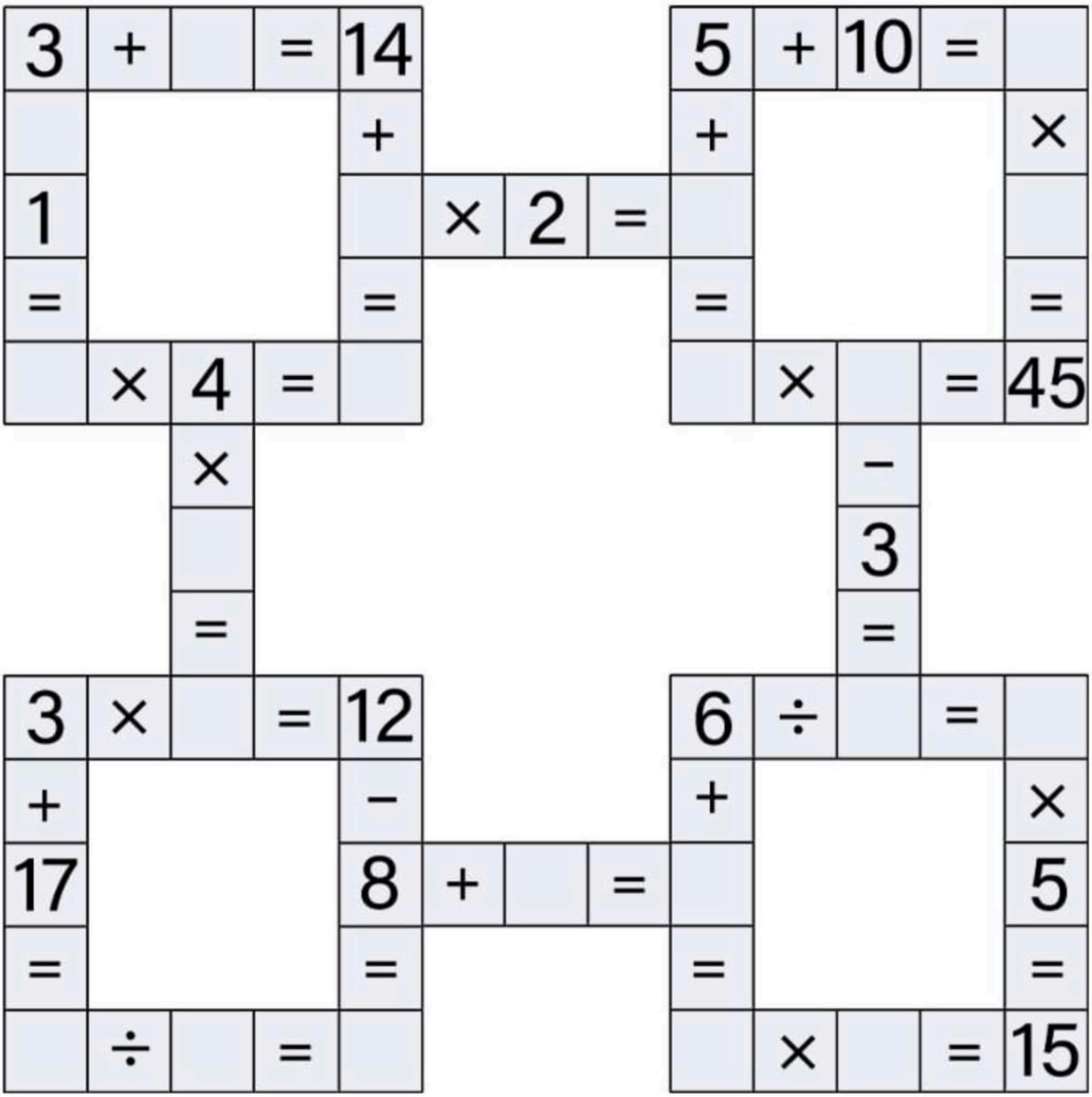
$$1\square 2\square 3\square 4\square 5=5$$

(a)

(b) $1\square 2\square 3\square 4\square 5\square 6\square 7=8$

5 points

How many triangles are there on the picture below?



10 points