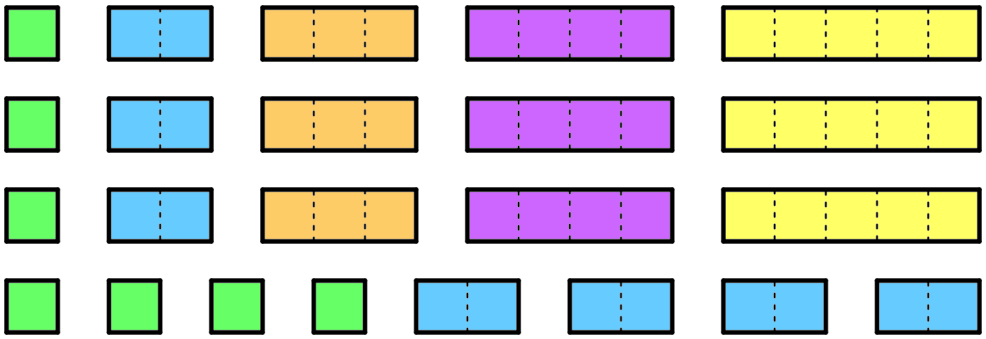
Application Activity

Beguiling Tiling

In each puzzle, the goal is to cover as much of the grid with tiles as you can. The tiles come in five lengths, as shown. You can draw tiles onto a PDF or onto a hard copy. Feel free to print this page and cut out a set of tiles for yourself if you would like to work on the puzzles using physical pieces!



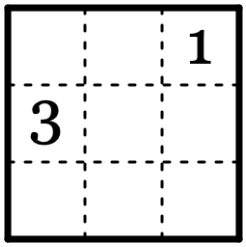
You can use as many of each tile as you want, and you can place them on the grid either horizontally or vertically, following two rules.

1. No two tiles of the same shape can touch along an edge. (It's fine if only the corners touch.)

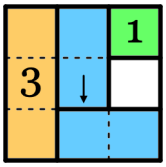
2. If a number appears in the grid, a tile made up of that many squares must cover the number. (It's fine to put more tiles on the grid as well.)

Your score is the number of squares covered by tiles. For instance, in the sample puzzle at right, the first tiling is invalid, because the tiles of size 2 touch along the edge indicated by the arrow. The second tiling works, and gives a score of 7. *It might not be possible to cover the entire grid with tiles!*

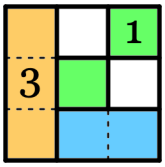
Sample Puzzle



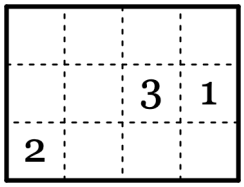
Bad



Good

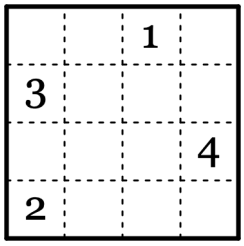


Puzzle #1



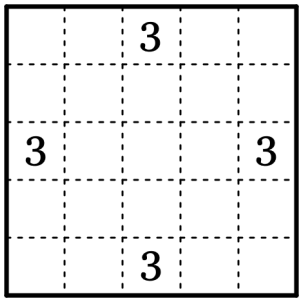
Score: _____

Puzzle #2



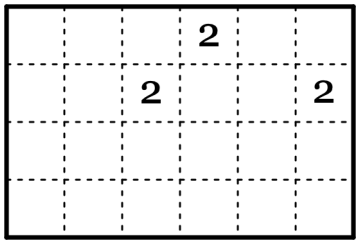
Score: _____

Puzzle #3



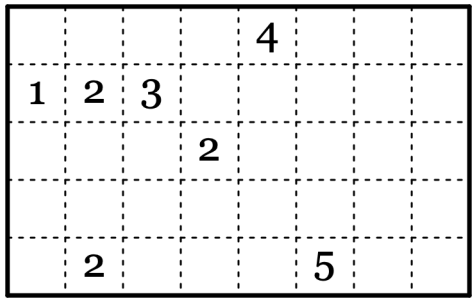
Score: _____

Puzzle #4



Score: _____

Puzzle #5



Score: _____

Fancy Fractions

Compute the three fraction sums below, writing each answer in simplest form.

$\frac{2}{5} + \frac{1}{10} =$ _____ $\frac{2}{9} + \frac{1}{36} =$ _____ $\frac{2}{13} + \frac{1}{78} =$ _____

(a) What patterns do you notice?

(b) In the boxes, write the two fraction sums that would come next.

(c) As much as you are able to, explain why the fraction sums turn out this way.