

Fill the boxes

Topic/Learning objectives of exhibit:

Geometry: volume and area; solving problems: different solutions of a challenge;
skills: calculation, 3D shapes; decomposition of numbers

List of Materials Required:

- A 3D printer
- 1 colour of filament for the 3D printer
- DM, wood, plastic, cardboard or multilinks
- Board DINA3: paper (plastified); double PVC printed board

Step-by-step Construction

Estimated Time with DM, wood or cardboard: 2 hours; with multilinks: 20 min

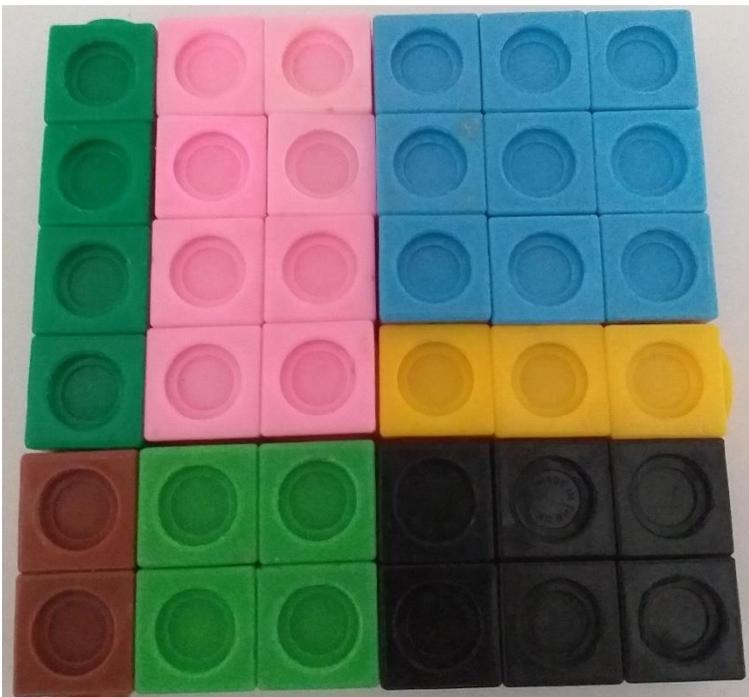
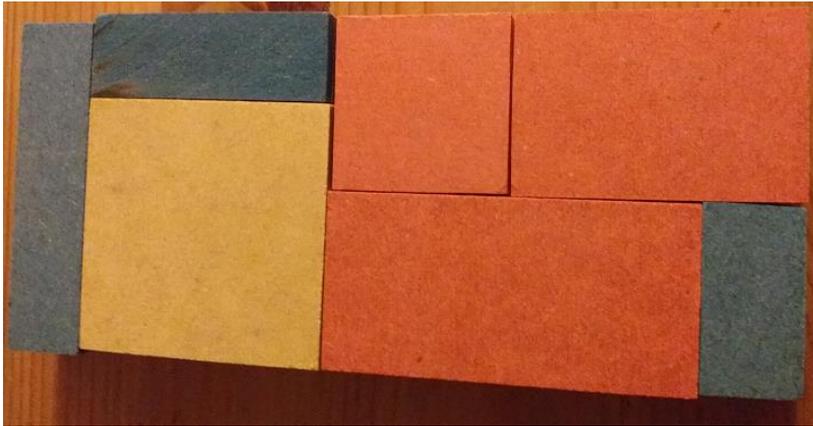
With DM or wood.

List and dimension of pieces (in units):

piece	dimensions		piece	dimensions		piece	dimensions
1	2x1x1		4	2x2x1		7	3x3x1
2	3x1x1		5	2x3x1			
3	4x1x1		6	2x4x1			

DM: unit=1,9 cm

Wood, cardboard, 3D printer and multilinks: 2cm



For 3D Printers

In the 3D printer version, the pieces will be designed with some carved details in bas-relief, so they resemble suitcases or groceries. It is fundamental, though, that you can stack them easily and that their proportions are still deductible by inspection.

The boxes could also be designed to be 3D printed, although this will limit too much their size and, therefore, the size of the pieces: Some 3D printer beds are 15x15 cm and the longest box is 12 units wide, so the “unit length” will become as short as 1 cm in those 3D printers.

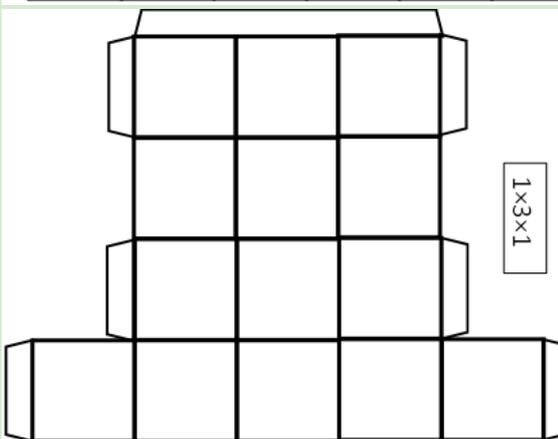
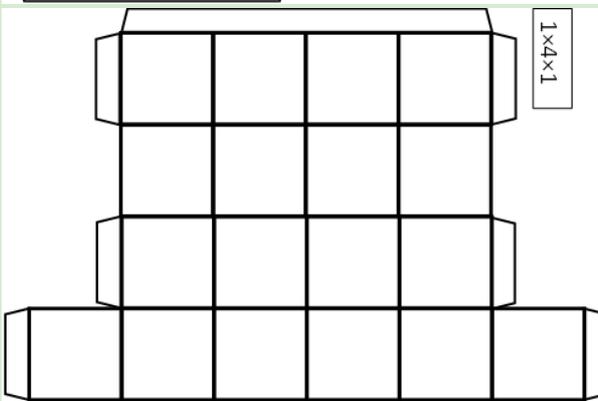
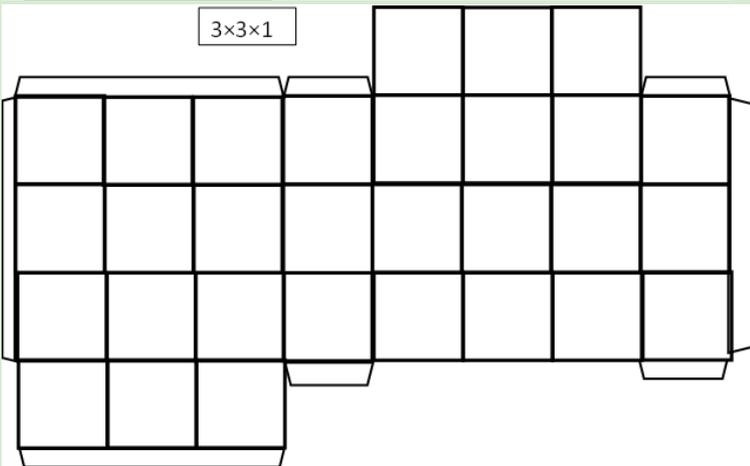
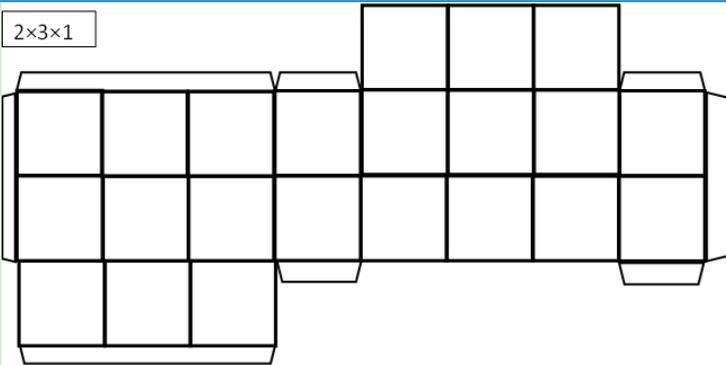
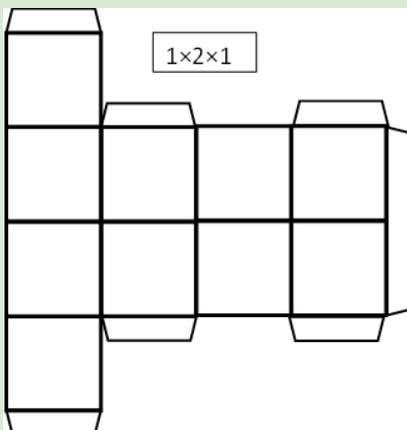
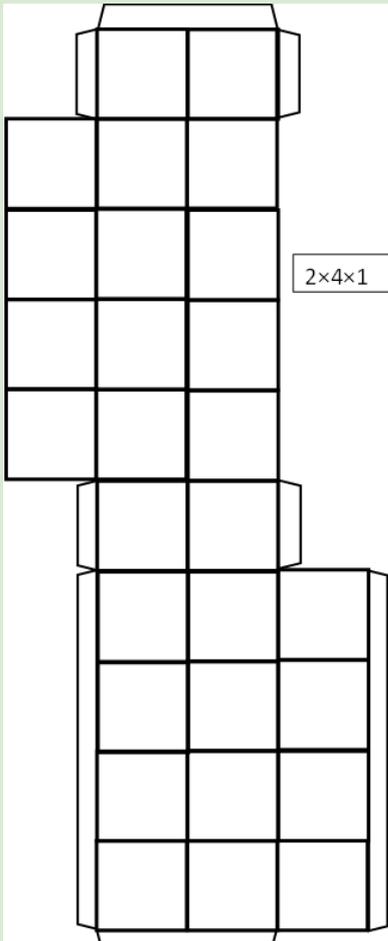
Building the pieces with cardboard/paper

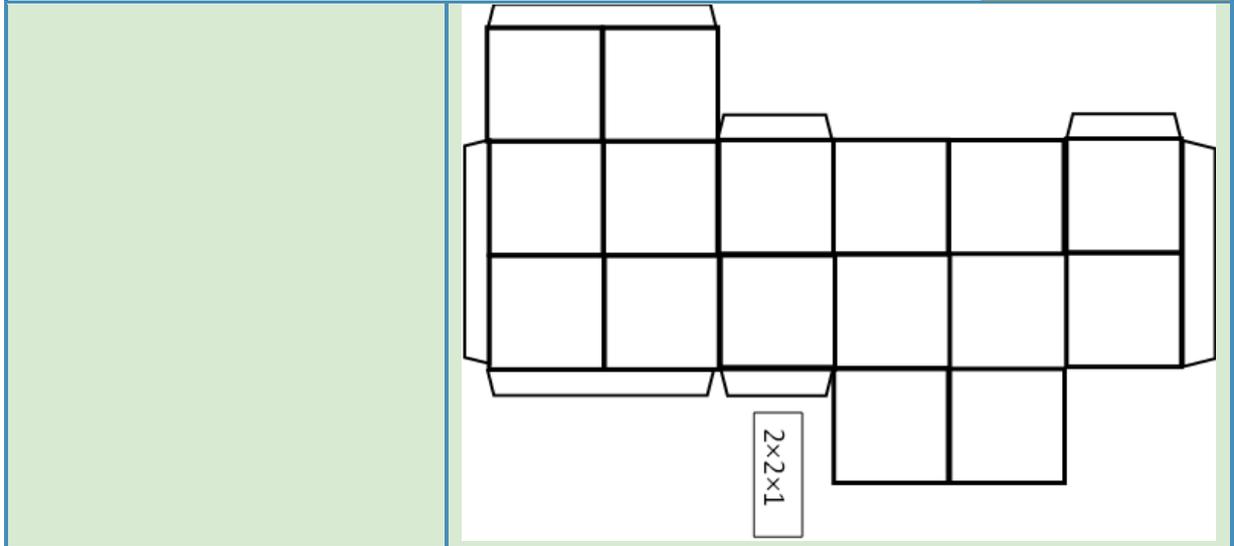
Step 1

Print the planar development of each prism and cut them

Step 2

Double the sides and the glue the labels





Observations

Board



Boxes

For each rectangle (trailer of one of the trucks), use all 7 pieces to make a solid block that covers it completely.

