



# Problem of the Week

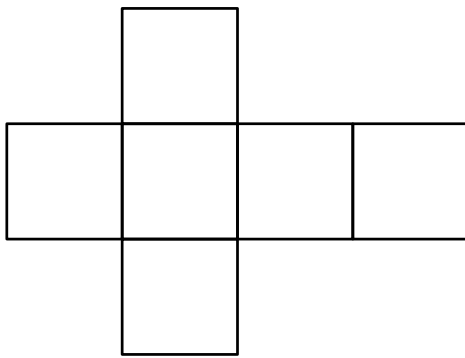
## Problem A and Solution

### Nancy's Nets

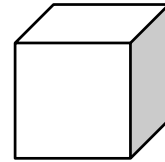
#### Problem

When Nancy recycles boxes she flattens them. Since she is learning about nets in school, she notices there are many different ways to flatten a box that is a cube into a net. A net is a pattern that can be cut out and then folded together to create a solid shape.

For example:



when folded  
properly makes



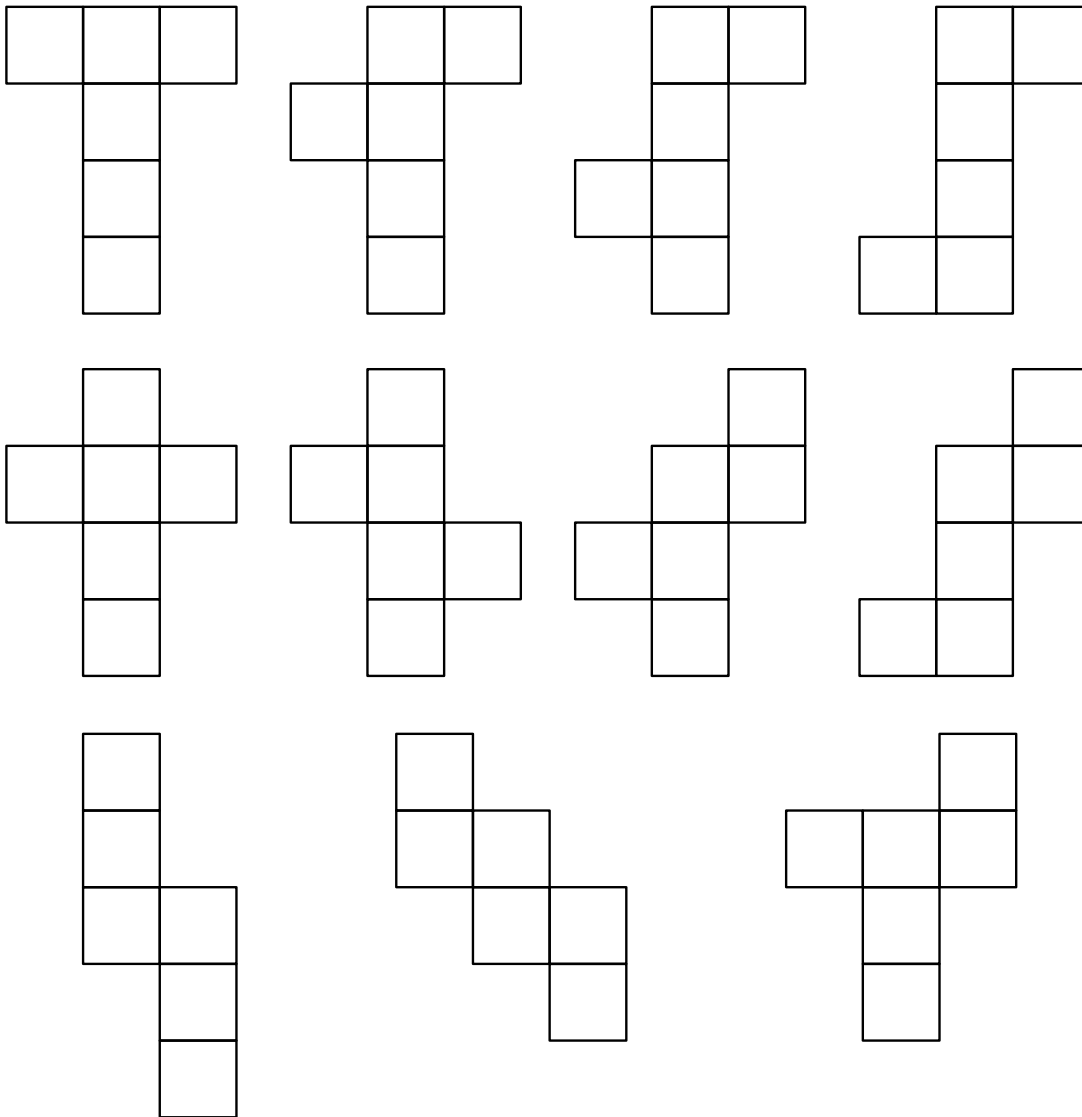
Nancy draws all the possible nets for a cube. There are eleven nets. What do they look like?





## Solution

Here are the eleven possible nets for a cube:





## Teacher's Notes

Being able to design a 2-dimensional net that can be folded into a 3-dimensional object has obvious advantages when it comes to storing and transportation. Imagine if you were manufacturing cardboard boxes and had to ship them already assembled. This would be an incredible waste of space. This application of geometry can be used for items as simple as cardboard boxes or as complex as elements of the International Space Station.

The CEMC has a series of e-books called “Invitations to Mathematics”.

<http://www.cemc.uwaterloo.ca/resources/invitations-to-math.html>

They are available for free online. One of the volumes aimed at grade 6 students focusses on nets. If you have not already seen these, you may find them useful resources.

