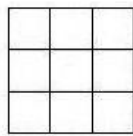# PROJECTIONS
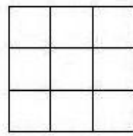
MATH CIRCLE GROUP A 02/06/2011

(1) Use your blocks to do the following:
 (a) Build two solids that are different but all three projections are the same.
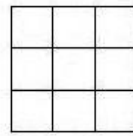 (b) Encode your solids as follows by drawing around each block: (L1=Level 1, L2=Level 2, and L3=Level 3)
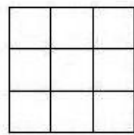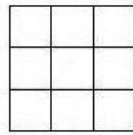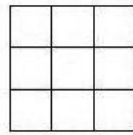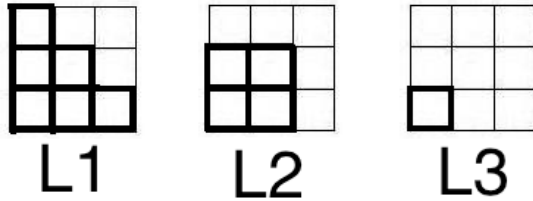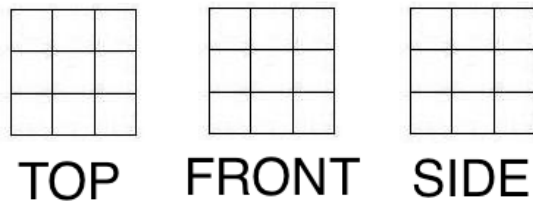
SOLID 1

L1　　　L2　　　L3

SOLID 2

L1　　　L2　　　L3

 (c) Draw your solid in 3D form if you would like to:

(2) Use your blocks to do the following:
   (a) Build the solid that has the following levels:

L1   L2   L3

   (b) Shade the grids to indicate the top, front, and left side projections:

TOP   FRONT   SIDE

   (c) Use your answer in part (b) to pick a separate color for the top, front and left side projection images. Now shade in L1, L2, and L3 the parts of the level images that contribute to the top, front and left side projections.

(3) Now WITHOUT building the solid, do the following:
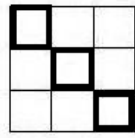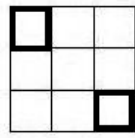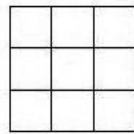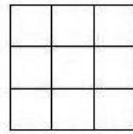   (a) Given these levels of a solid, shade the grids to indicate the top, front and left projections.

L1   L2   L3
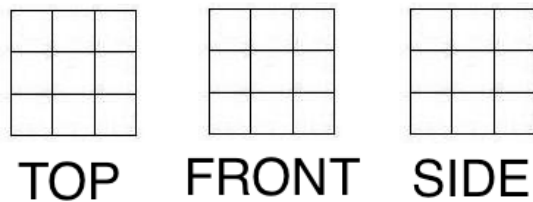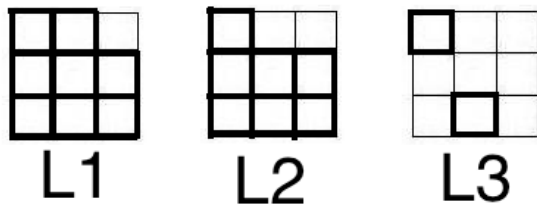
TOP   FRONT   SIDE

   (b) How is the top projection related to the drawings of the levels?

(4) Without building the solid, do the following:
   (a) Given these levels of a solid, shade the grids to indicate the top, front and left projections.
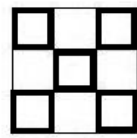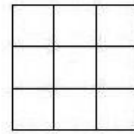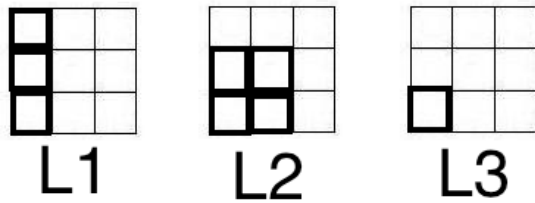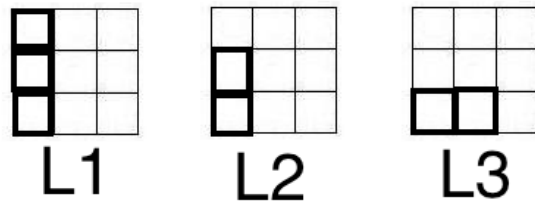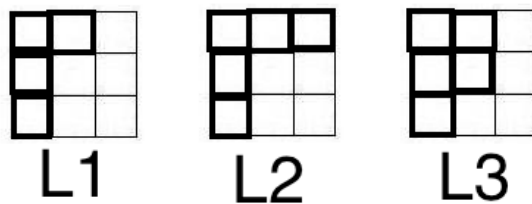

L1   L2   L3

TOP   FRONT   SIDE

(5) Explain why the following solids can not be built out of cubes. Identify the problem areas by coloring them:
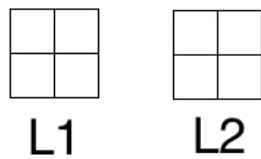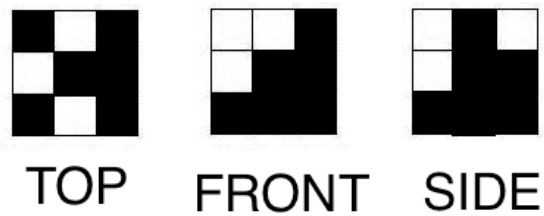
(a)

L1   L2   L3

(b)

L1   L2   L3

(c)

L1   L2   L3

(d) Can these shapes be build with other materials (besides cubes)? How?
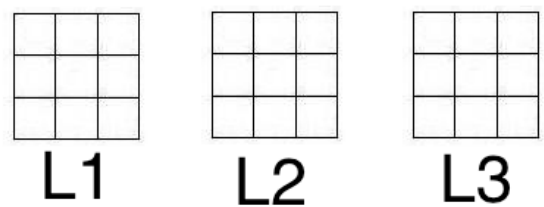
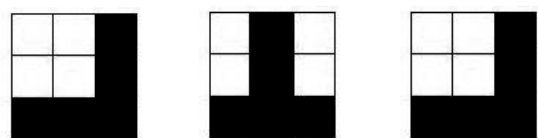(6) Now let's try the opposite way. Given these projections, encode them into levels.

TOP FRONT SIDE
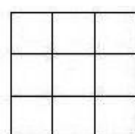

L1   L2

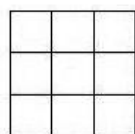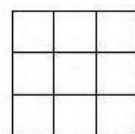(7) CHALLENGE! Encode these projections into levels:

(a)

TOP   FRONT   SIDE

L1   L2   L3

(b)
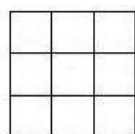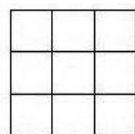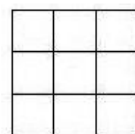

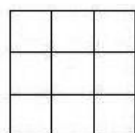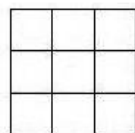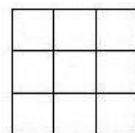(8) Build your own solid and write your own question about it.