

MAT PLANS

Performance Standard 9B.E

Use a mat plan and snap cubes to make a three-dimensional building and match it to a two-dimensional drawings of the buildings accordingly:

- *Mathematical knowledge*: match a three-dimensional figure with a two-dimensional drawing of that figure,
- *Strategic knowledge*: use appropriate strategies for identifying, describing and comparing relationships among two-dimensional and three-dimensional figures, and
- *Explanation*: explain completely and clearly what was done and why it was done.

Procedures

1. *In order to identify, describe, classify and compare relationships using points, lines, planes, and solids (9B)*, students should experience sufficient learning opportunities to develop the following:
 - Match a front, right side, and top view drawing with a three-dimensional model built with cubes.
2. Provide each student with a copy of the “Mat Plans” task sheet, the rubric and 40 snap cubes. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it.
3. Have students use the snap cubes to build each of the 5 buildings according to the mat plans. Ask students to place each building on a sheet of paper and write the letter of the building on the paper in front of the building. You may use a digital camera to take a picture of each student’s three-dimensional buildings so you can see whether the buildings were constructed properly. This will help you assess they may have made incorrect matches. A video camera would work as well.
4. When all five buildings are finished, the students should look at the set of plans with only a base, front and right side views and match the two-dimensional plan with the three-dimensional building. NOTE: Sometimes it helps to instruct the children to cover one eye as they view the front and side of each building. This gives them a more two-dimensional look at the buildings.
5. Students should justify each match in writing on the back of the paper.
6. Evaluate student work using the rubric and the guide on the rubric to determine the performance level. You will first be looking for correct construction from the mat plans. This is a spatial visualization activity that requires the student to follow visual directions. Next you will be looking for correct matching of two-dimensional plans with a three-dimensional object. Three of the base views are exactly the same so the front and side views are essential for a correct match. The correct answers for tasksheet B are: 1. C, 2. D, 3. E, 4. B, 5. A. Students should explain their buildings and why the buildings are correct.

Examples of Student Work follow

Time Requirements

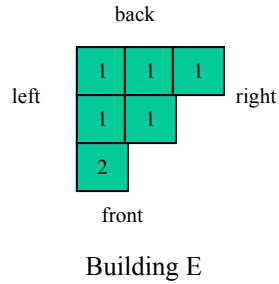
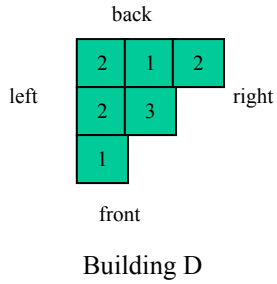
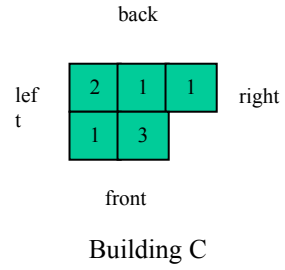
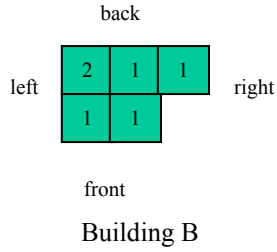
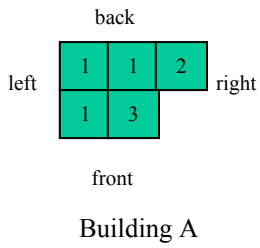
- One class period

Resources

- 40 snap cubes for each student
- Copies of the “Mat Plans” task sheets
- Digital camera or video camera (optional)
- Mathematics Rubric

NAME _____ DATE _____

MAT PLANS PART A



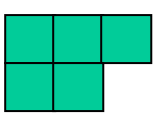
NAME _____ DATE _____

MAT PLANS - PART B

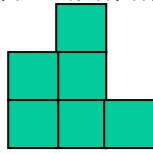
Matching Buildings A, B, C, D, E

On the mats provided, construct buildings A, B, C, D, E. Match each set of plans - BASE, FRONT, RIGHT - with the correct building.

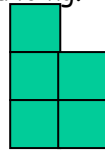
Set 1



BASE
(Front at Bottom)



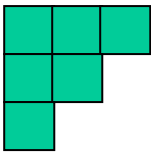
FRONT



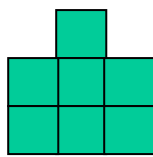
RIGHT

Matches building _____

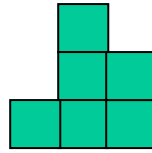
Set 2



BASE



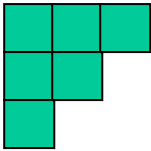
FRONT



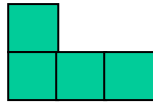
RIGHT

Matches building _____

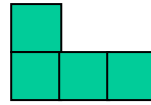
Set 3



BASE



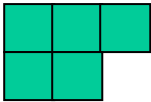
FRONT



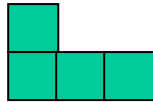
RIGHT

Matches building _____

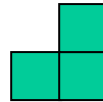
Set 4



BASE



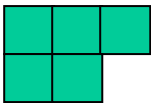
FRONT



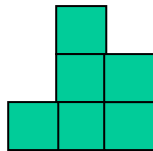
RIGHT

Matches building _____

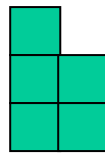
Set 5



BASE



FRONT



RIGHT

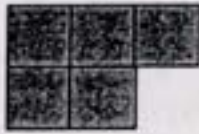
Matches building _____

MAT PLANS - PART B

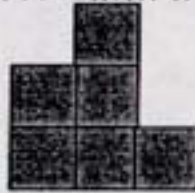
Matching Buildings A, B, C, D, E

On the mats provided, construct buildings A, B, C, D, E. Match each set of plans - BASE, FRONT, RIGHT - with the correct building.

Set 1



BASE
(Front at Bottom)



FRONT

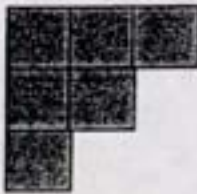


RIGHT

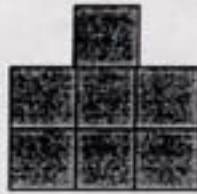
Matches building

C

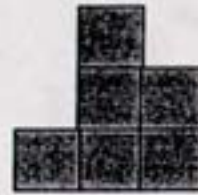
Set 2



BASE



FRONT

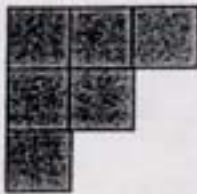


RIGHT

Matches building

D

Set 3



BASE



FRONT



RIGHT

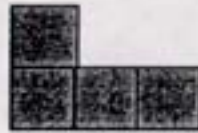
Matches building

E

Set 4



BASE



FRONT



RIGHT

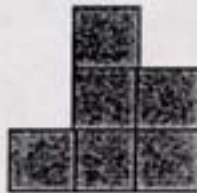
Matches building

B

Set 5



BASE



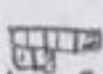
FRONT

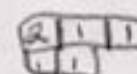


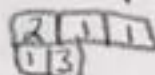
RIGHT


Matches building


A

I made building A with 8 blocks because in the floor plan it says to use 8 blocks. Also it matches Set 5 on the mat plans part B sheet. I made building A correctly because its in this shape . Also in the upper left corner there is one block, in the middle 1 block, in the right 2, in the lower ^{left} 1 block, in the lower middle 3 blocks.

I made building B correctly because I had 6 blocks which is how many I'm supposed to have. It matches set 4 on mat plans part B sheet. Also it has this shape . It has 2 blocks in the upper right corner, 1 block in the upper middle, 1 block in the upper left, 1 block in the lower left, and 1 block in the lower middle.

I made building C correctly because it has 8 blocks which is correct. It matches set 1 on the mat plans part 3 sheet. I has the correct shape of . It has 2 block in the upper left, 1 block in the upper middle, 1 block in the upper right, 1 block in the lower left, and 3 blocks in the lower middle.

I made D correctly because it has 11 blocks which is correct. It matches set 2 on the mat plans B sheet. It has this shape . It has 2 blocks in the upper left, 1 block in the upper middle, 2 blocks in the upper right, 2 blocks in the middle left, 3 blocks in the middle middle, and 1 block in the lower left.

I made E correctly because it has 7 blocks which is correct. It matches set 3. It has the shape of . 1 block in the upper left, 1 block in the upper middle, 1 block in the upper right, 1 block in the middle left, 1 block in the middle middle, and 2 blocks in the lower left.