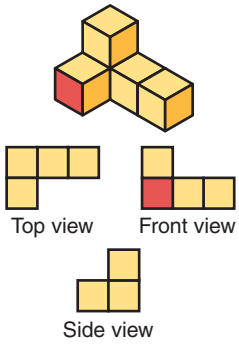
MATH ACTIVITY 9.3

Views of Cube Figures

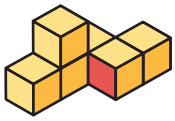
Purpose: Explore space figures by building and drawing views of cube figures.

Materials: Cubes for constructing figures; grid paper (copy from the website) for drawing views and blueprints.

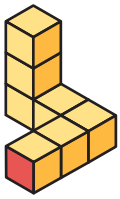


1. The cube figure at the left was constructed from five cubes. Looking at the figure from the top, the front (one face colored red), and the right side, gives three two-dimensional views of the cube figure. Build each figure in parts a, b, and c and sketch the top, front, and right side view of each figure. (The only hidden cubes are those supporting other cubes.)

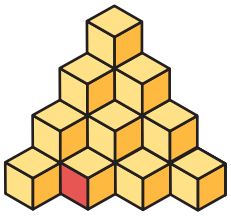
***a.**

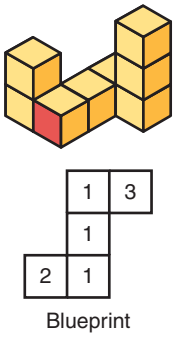


b.



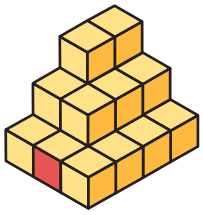
c.



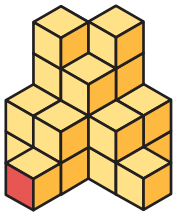


2. A *blueprint* for a cube figure can be made by showing a top view of the figure and by writing a number in each square to indicate the number of cubes in that column of the cube figure. For example, a cube figure and its blueprint are shown at the left. Sketch a blueprint for each of the cube figures in parts a, b, and c.

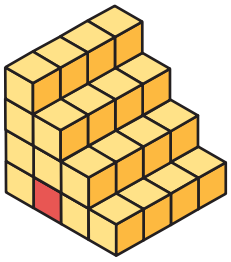
***a.**



b.



c.

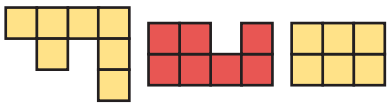


NCTM Standards

By representing three-dimensional shapes in two dimensions and constructing three-dimensional shapes from two-dimensional representations, students learn about the characteristics of shapes. p. 168

3. The top view, front view, and side views of two different cube figures are given below. Use the *fewest* number of cubes possible to construct each corresponding figure. Sketch a blueprint and give the total number of cubes used for each cube figure in parts a and b.

a.



b.

4. a. In activity 2, the term blueprint is defined for the TOP VIEW of a cube figure. Why does this give more information than defining blueprint for the FRONT VIEW or defining blueprint for the SIDE VIEW? Illustrate your explanation with an example.

b. If two people were each given a blueprint for a cube figure, would it be possible for each person to correctly build a corresponding cube figure and have the two cube figures be different? Illustrate your reasoning with examples.