


Grade 8 Mathematics

Geometry: Lesson 13

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol () by them.

Purpose of Lesson 13:

- In this lesson, the tutor and the students will
 - ✓ identify different views of three-dimensional objects.

Equipment/Materials Needed:

- Copies of Student Sheets 113 and 114
- Paper and pencils
- Chalkboard
- A cylinder, cone, cube, pyramid, rectangular solid, and a sphere. You can use objects from the real world or borrow them from a mathematics teacher
- Five small cubes of the same size
- Overhead projector (Optional)

Preparations before beginning Lesson 13:

- Run one copy of Student Sheets 113 and 114 for each student.
- Have paper and pencils available.
- Gather the solid figures and the cubes.
- You should cover Lesson 2 of Geometry before beginning this lesson.
- If you are in a classroom that has an overhead projector, ask permission to use it.


Lesson 13: Geometry

Say:

In this lesson, you are going to review three-dimensional figures. What do I mean by a three-dimensional figure? (The figures are not flat. They have height.) **What is another name for three-dimensional figures?** (solid figures) **What are some of the solid figures that you have studied before?** (cones, pyramids, rectangular solids, cubes, spheres, and cylinders) **Describe a rectangular solid.** (It is a figure made up of rectangles and/or squares. It has six faces.) **How does a cube compare to a rectangular solid?** (It is a special type of rectangular solid. All of its faces are squares.) **Describe a pyramid.** (A pyramid is made up of triangles and sometimes one other figure. The other figure could be a square, a pentagon, a hexagon, etc. It comes to a point.) **Describe a cone.** (A cone comes to a point. It has a circle as one of its faces.) **Describe a sphere.** (It is a ball that has no flat faces.)

Say:

We can look at solid figures from the top, bottom, front, back, or from the sides. We often get a different view looking at the figure from different points.

 Take each solid figure, one at the time. Ask the students to describe what they see when they looked at the figure from the top, side, and front. If you have access to an overhead projector, these views are easier to see.

Cube: All views will be squares.

Rectangular solid: The views will be either rectangles or squares.

Pyramid: The views of pyramids can vary depending on the base, but they always have triangles as faces. The base may be a triangle, a square, a pentagon, etc.

Cones: Students should see a circle if they look from the top down. When placed on its side, a pyramid looks sort of like a triangle, but the bottom is not a straight line.

Cylinder: Students should see a circle if they look down from the top.

 Give students Student Sheet 113.

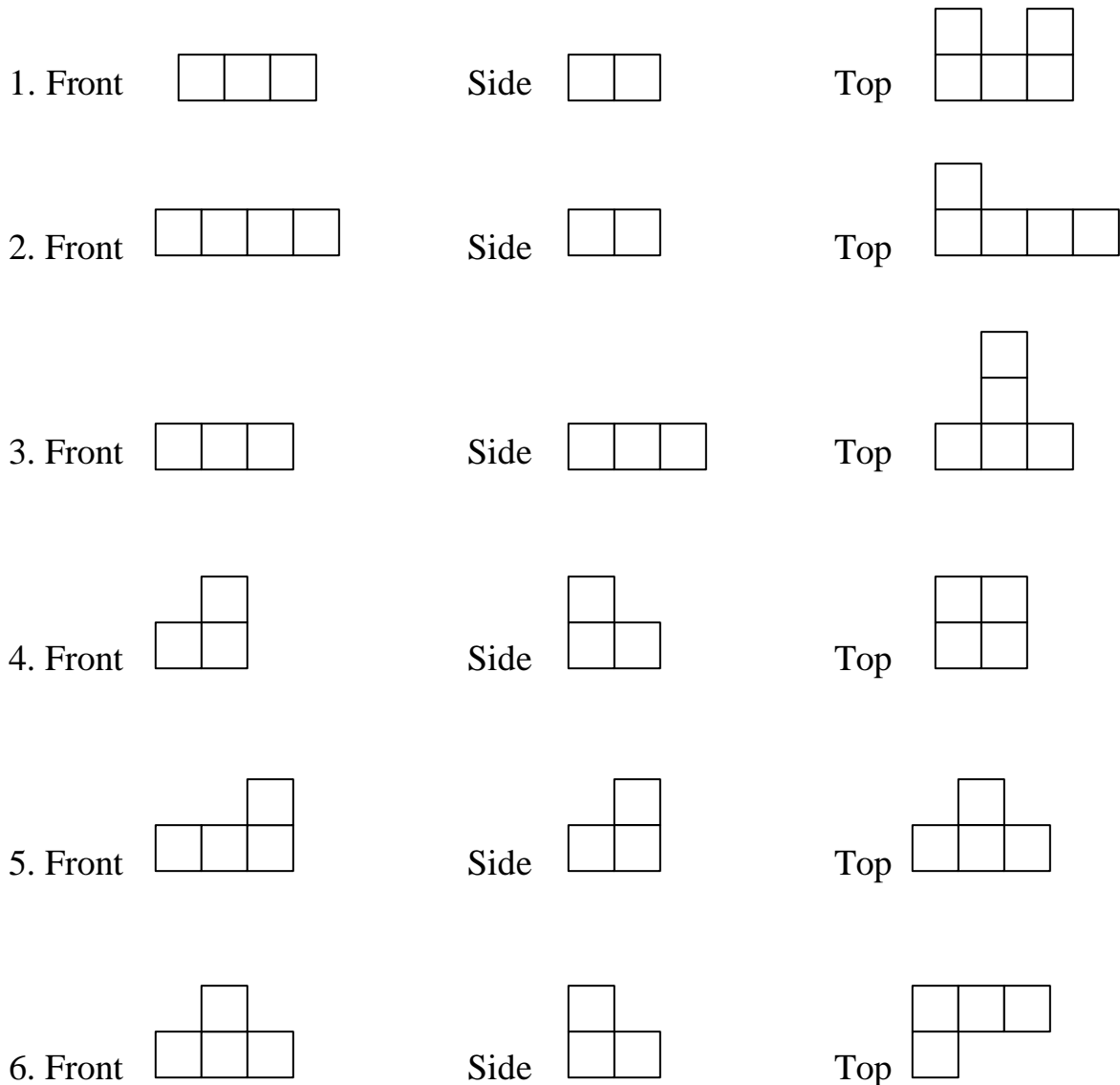
Answers:

- | | | | |
|-----------|------------|--------------|--------------|
| 1. D | 2. A | 3. A, B | 4. A, C |
| 5. none | 6. D | 7. rectangle | 8. rectangle |
| 9. square | 10. square | 11. square | 12. square |

The next part of the lesson really depends on using the cubes. It is difficult for students to visualize the front, side, and top views of figures without using objects. Have the students build each figure, and let them get above it in order to look at the top view. Have them get eye level with the blocks to see the side and the front views.

 Give students Student Sheet 114.

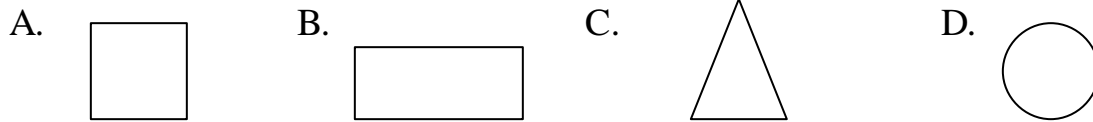
Answers:



 Have one student summarize today's lesson. Today the students drew two-dimensional views of three-dimensional figures.

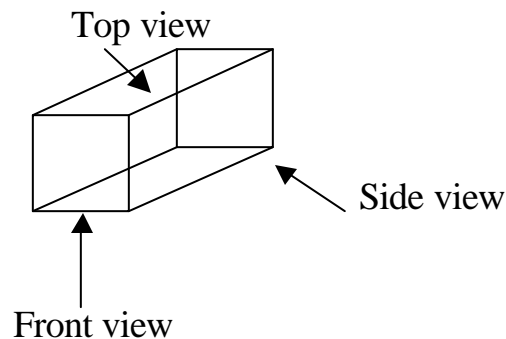
Student Sheet 113 (Geometry: Lesson 13)

The figures below are parts or faces of solid figures.



1. Which of the above faces could be a face of a cone?
2. Which of the above faces could be a face of a cube?
3. Which of the above faces could be a face of a rectangular solid?
4. Which of the above faces could be a face of a pyramid?
5. Which of the above faces could be a face of a sphere?
6. Which of the above faces could be a face of a cylinder?

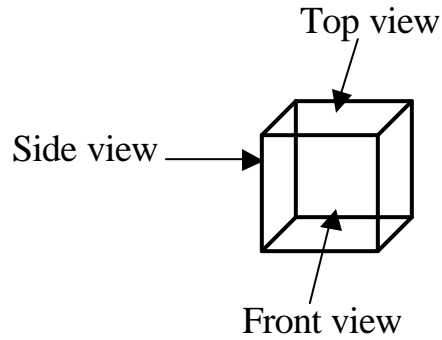
For Questions 7 – 9, look at the rectangular solid below.



7. If I look at this rectangular solid from the top, what figure would I see?
8. If I look at this rectangular solid from the side, what figure would I see?
9. If I look at this rectangular solid from the front, what figure would I see?

Student Sheet 113 (Geometry: Lesson 13) continued

For Questions 10 – 12, look at the cube below.

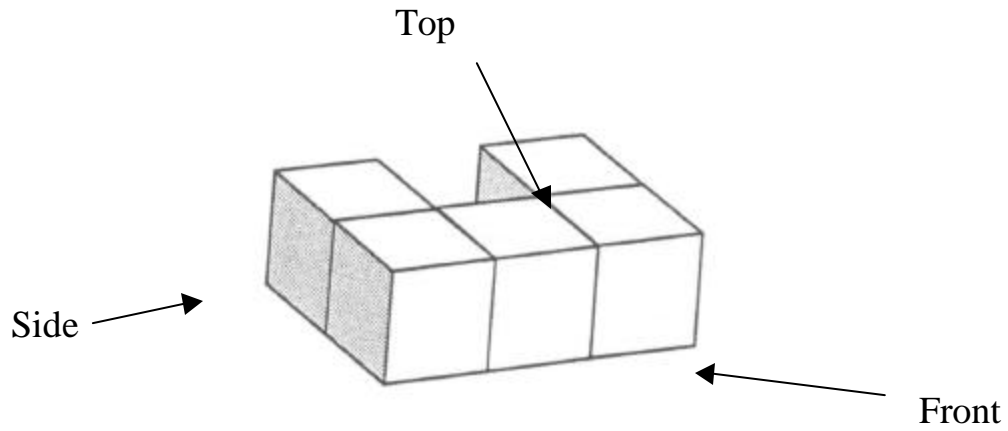


10. If I look at this cube from the top, what figure would I see?
11. If I look at this cube from the side, what figure would I see?
12. If I look at this cube from the front, what figure would I see?

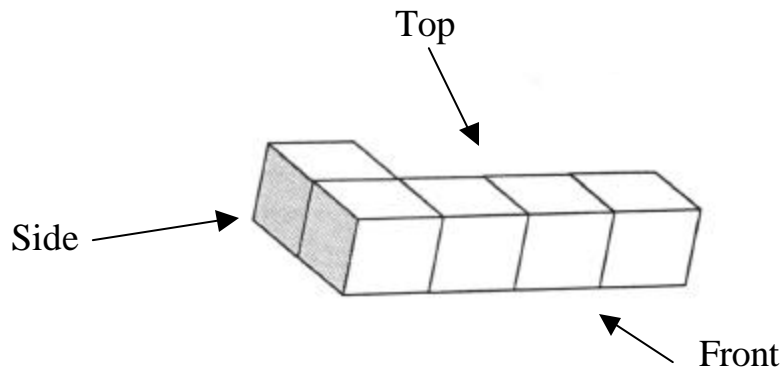
Student Sheet 114 (Geometry: Lesson 13)

Build each figure below. Then draw the top, side, and front views of each.

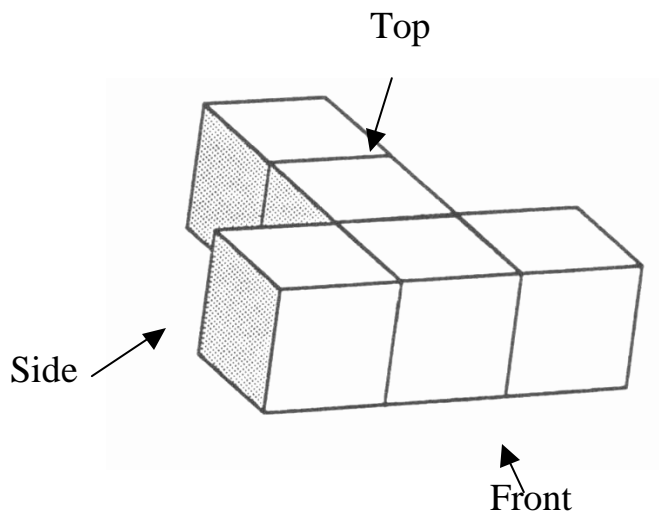
1.



2.



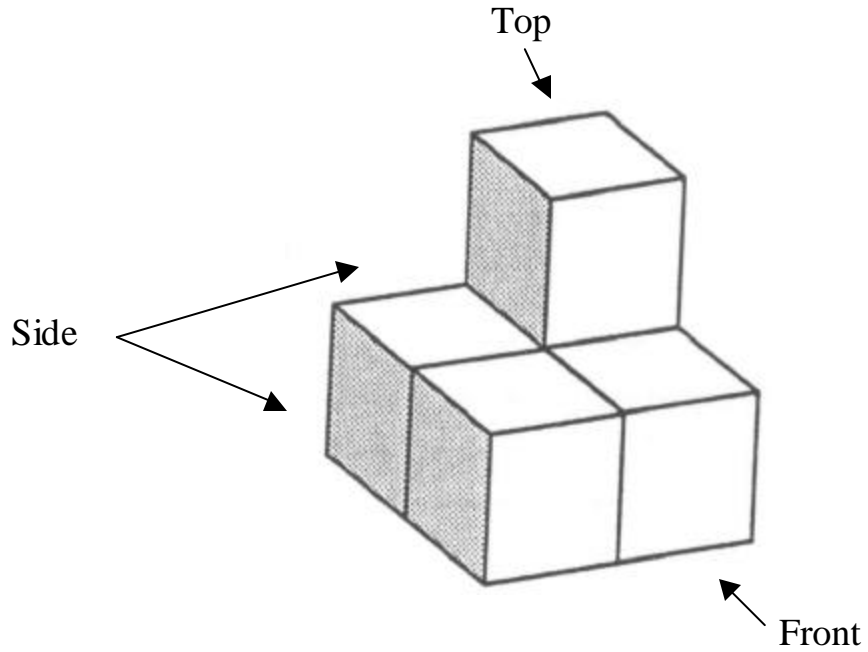
3.



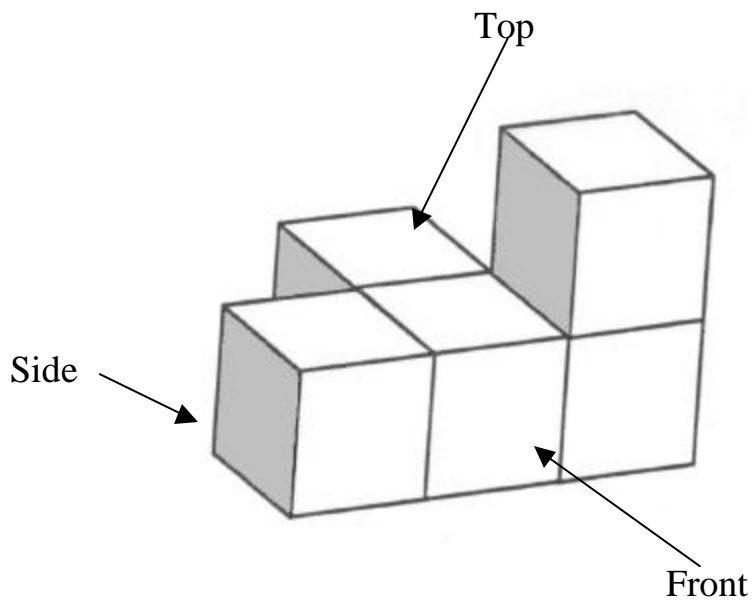
Student Sheet 114 (Geometry: Lesson 13) continued

Build each figure below. Then draw the top, side, and front views of each.

4.



5.



Student Sheet 114 (Geometry: Lesson 13) continued

6.

