Grade 4 Mathematics
Geometry: Lesson 6

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 6:
- In this lesson, the tutor and the students will
  - ✓ create a figure from given shapes, and
  - ✓ manipulate common figures to analyze and produce new figures.

Equipment/Materials Needed:
- Copies of Student Sheets 79 and 80
- Paper and pencils
- You can use tangrams made on an Ellison Machine, if they are available, instead of Student Sheet 79.
- One pair of scissors, one paper clip per student.

Preparations before beginning Lesson 6:
- Run one copy of Student Sheet 80 for each student. If you do not have tangrams, run Student Sheet 79. Each sheet will make tangram pieces for two students. Cut out the pieces. Paper clip each set. You may want to use heavy or stock paper.
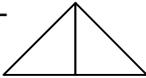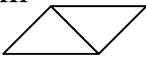- Have paper and pencils available.

Lesson 6: Geometry

Say:

In this lesson, you will put shapes together to form new shapes or figures.

⌡ Hand out the tangram pieces (either from Student Sheet 79 or cut pieces from the Ellison machine) to each student. They should have 7 pieces each, 2 large triangles, 2 small triangles, one medium triangle, one square, and one parallelogram.

Say:

| **Take the 2 small triangles. If you put the triangles together, what shapes can you make?** Allow them time to work with the shapes. (Another triangle - ⟨△⟩ , a square ⟨◻⟩ , a parallelogram ⟨▱⟩ .) |
| --- |
| Ask students to choose any two shapes to make a third shape. Students must be able to name their new shape. (Example: the square and the triangle can make a quadrilateral.) Ask them to make the following figures using as many pieces as they want. Having students sketch their new figures will help you check the answers. |

1. A rectangle - one answer is:

2. A different rectangle - one answer is:
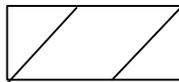
3. A large triangle - one answer is:
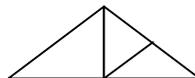
4. A six-sided figure- one answer is:
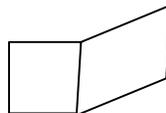
5. A five-sided figure - one answer is:
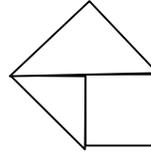
Say:

Sometimes you can't pick up the figures and move them, but you can visualize or see in your mind how the figures would look of they were put together.

⌡ Give Student Sheet 80 to the students.

Answers:
1. the square or 3rd figure
2. the rectangle or last figure
3. the rectangle or last figure
4. the parallelogram or 2nd figure
5. B. This problem may give the students trouble. They may think that the two triangles will make the square, but they will not. The angles will not fit together to make the right angles that a square needs.
6. D
7. B
8. A
9. C
10. B
11. A

⌡ Have one student summarize today's lesson. In order to work with complicated figures, students must be able to see the parts in the figure.

Student Sheet 79 (Geometry: Lesson 6)

Tangrams

Student Sheet 80 (Geometry: Lesson 6)

Look at the shapes on the left in each row. All of the shapes, but one, were used to make the figure on the right. Circle the shape that was not used.

1.
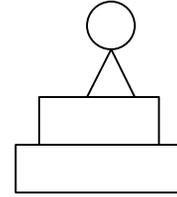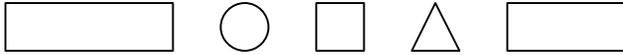
2.
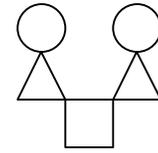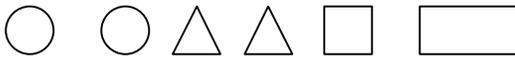
3.
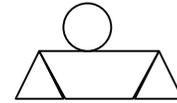
4.
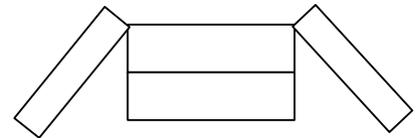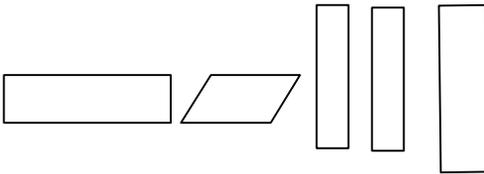
5. If these two figures were put together, what figure(s) could they make?
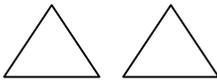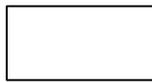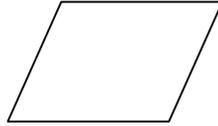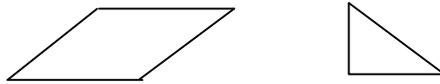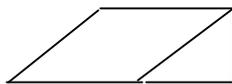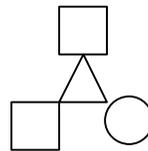
A.   B.   C.   D.

Student Sheet 80 (Geometry: Lesson 6) Cont.

6. If these two figures were put together, what figure(s) could they make?
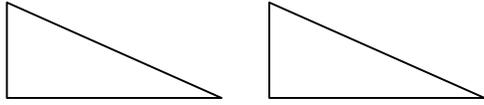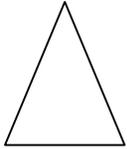
A.   B.   C.   D.

7. If these two figures were put together, what figure(s) could they make?

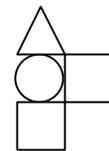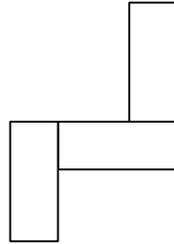A.   B.   C.   D.
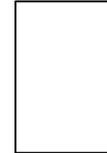
8. Which figure on the right can be made by combining all of the shapes on the left.
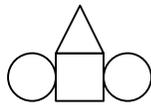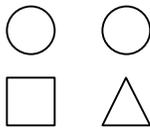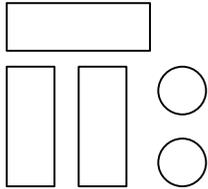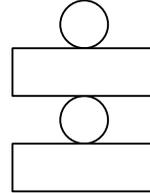
A.   B.   C.

Student Sheet 80 (Geometry: Lesson 6) continued

Which picture on the right can be made by combining all of the shapes on the left.
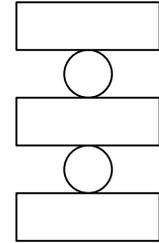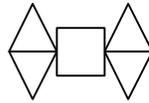
9.

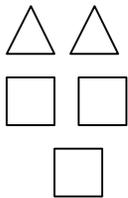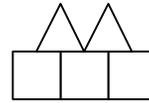A.   B.   C.

10.

A.   B.   C.

11.

A.   B.   C.