

Grade 4 Mathematics

Geometry: Lesson 5

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 5:

- In this lesson, the tutor and the students will
 - ✓ sort objects or shapes according to two or more attributes, and
 - ✓ sort objects or shapes into given categories.

Equipment/Materials Needed:

- Copies of Student Sheets 76 – 78
- Paper and pencils
- One pair of scissors; two paper clips per student

Preparations before beginning Lesson 5:

- Run copies of Student Sheets 76 – 78 for each student. Cut out the figures on sheet 76. Paper clip each set.
- Have paper and pencils available.

Lesson 5: Geometry

Say:

In this lesson, you will look at what different figures have in common and how you could sort the figures into groups.

└ Give students the cut-out figures from Student Sheet 76 Part A. Ask students to sort the shapes into two groups. Talk about how each student sorted the shapes. They may say they sorted the figures into groups of black or white figures, into groups of large or small figures, or into groups of figures that have 4 sides and those that do not have 4 sides. All of the above groupings are correct. Ask students to name each figure. Figure names were a part of Lesson 2 in Geometry.

Figure names:

- | | |
|------------------------------|------------------------------|
| 1. small white square | 2. small black circle |
| 3. small black triangle | 4. large white trapezoid |
| 5. large black rectangle | 6. small black parallelogram |
| 7. small white parallelogram | 8. small white pentagon |
| 9. large white triangle | 10. large black circle |
| 11. large white square | 12. small white rectangle |

└ Give students the cut-out figures from Student Sheet 76 Part B. Have students sort these shapes. This time, ask a student to explain how another student sorted the shapes. What rule did the other student use? (Possibly large and small shapes or solid and shaded, or big and small, etc.) Ask students to name each figure.

Figure names:

- | | |
|--|----------------------------|
| 13. small white triangle | 14. large white pentagon |
| 15. small white octagon | 16. small white rectangle |
| 17. small white quadrilateral or trapezoid | 18. large black pentagon |
| 19. small black quadrilateral or trapezoid | 20. large striped triangle |
| 21. large white hexagon | 22. small striped circle |
| 23. large striped circle | 24. large black octagon |

└ Give Student Sheet 77. Ask students to draw a figure that could complete each set. All of the members of the set must fit the rules above it. For example, in number 1, there are already 2 shapes; so the shape drawn must be a circle or a triangle. If they drew any other shape, the set would have 3

shapes. There are already 2 sizes, so the circle or rectangle must be either of these sizes. Have students discuss each problem.

Answers: Answers will vary, but here are possible ones.

1. small circle, small triangle, large circle, or large triangle with any shading
2. a square that is not the size of the other three
3. some shape other than a triangle, either striped or white, any size
4. a triangle, square, or trapezoid either white, black, or striped for shading
5. a shape other than a triangle or square and not the same size as the ones drawn, any shading
6. a triangle or square, either large or small, striped or white




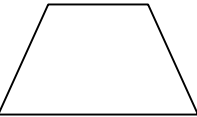


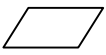

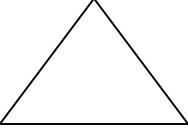
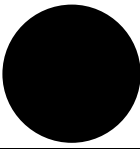

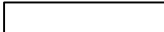
└ Give Student Sheet 78. It is important that students realize that a shape can be turned, flipped, or moved and that it is still the same shape.


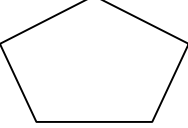

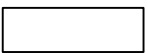

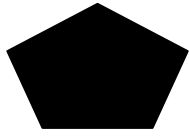

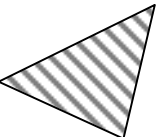
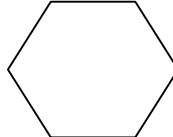

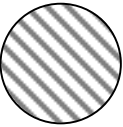

Answers:

1. B
2. A, E

└ Have one student summarize today's lesson. To develop spatial sense, students must be able to see how shapes are alike and how they are different.

Student Sheet 76 (Geometry: Lesson 5)

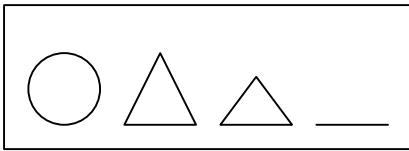
1. 	2. 	3. 
4. 	5. 	6. 
7. 	8. 	9. 
10. 	11. 	12. 

13. 	14. 	15. 
16. 	17. 	18. 
19. 	20. 	21. 
22. 	23. 	24. 

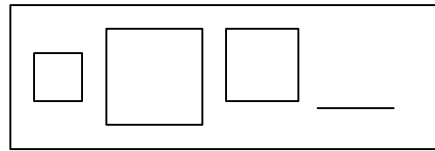
Student Sheet 77 (Geometry: Lesson 5)

Draw a figure that could complete each set below. Your figure must fit the two rules. For example, the box in problem 1 can have only two types of shapes. You could not add a square. It can have only two different sizes.

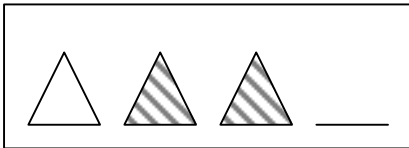
1. 2 shapes; 2 sizes



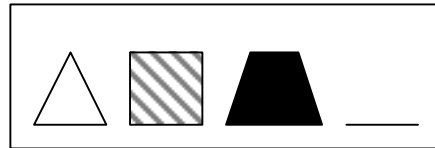
2. 1 shape; 4 sizes



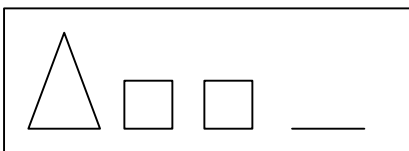
3. 2 shapes; 2 shades



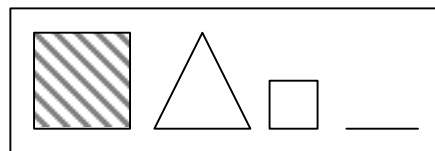
4. 3 shapes; 3 shades



5. 3 shapes; 3 sizes

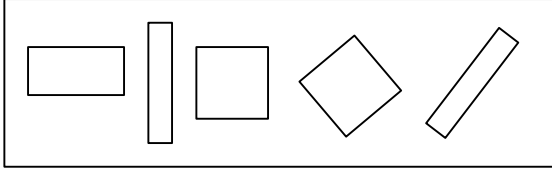


6. 2 shapes; 2 sizes; 2 shades

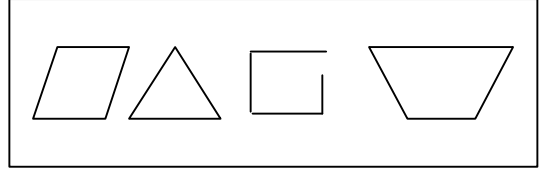


Student Sheet 78 (Geometry: Lesson 5)

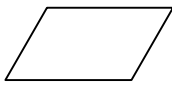
These shapes are all rectangles.



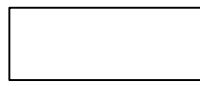
These shapes are not rectangles.



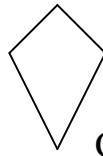
1. Which of the following are rectangles?



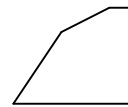
A.



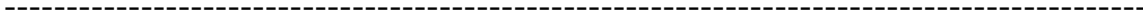
B.



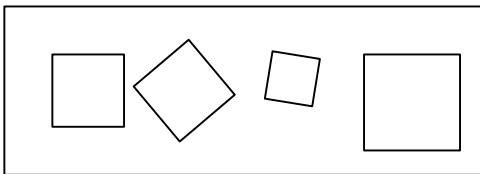
C.



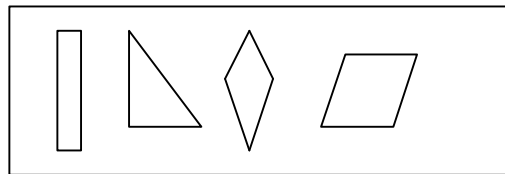
D.



These figures are all squares.



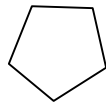
These figures are not squares.



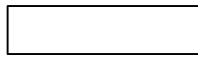
2. Which of the following are squares?



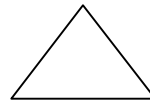
A.



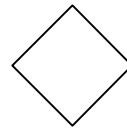
B.



C.



D.



E.