Building with Triangles
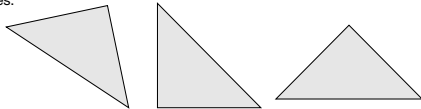
You are going to build shapes by putting together triangles. First you will build shapes with two triangles. Then you will build shapes with three triangles.
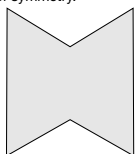
Discuss

Questions 1–3 refer to the triangles shown above.

1. How many sides (edges) does each triangle have?

2. A point where two sides come together is called a **vertex. Vertices** are at the corners. How many vertices does each triangle have?

3. How many **right angles** (square angles) does each triangle have? (Hint: compare each angle in a triangle with a corner of a square tangram piece or a piece of paper.)

4. A shape has **line symmetry** if you can fold it in half so that the halves match exactly. The fold line is called a **line of symmetry.** How many lines of symmetry does the following shape have? Sketch the shape and show the lines of symmetry.
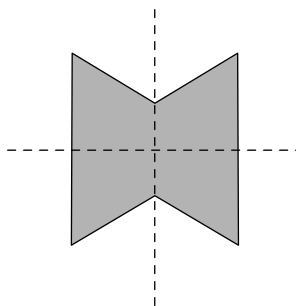
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Two shapes are **congruent** if they have the same size and shape. You can show that one shape is congruent to another by moving it so that it covers the other shape exactly. You may need to flip it.
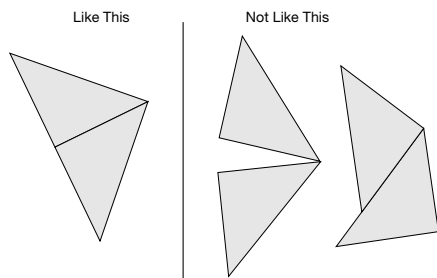
5. Cover one shape below using the two small triangles from the tangrams. Show that it is congruent to the second shape by turning it to cover the second shape.

Rules for Building with Triangles
Use these rules for building shapes with triangles:

**Rule 1. Edge-to-edge rule:** The triangles must be put together edge to edge.

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Rule 2. Same-shape rule: Count two shapes as the same if they are congruent.

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Building with Triangles (SG pp. 307–309) Questions 1–9

1. 3 sides

2. 3 vertices

3. 1 square corner or right angle

4. Two lines of symmetry

5. Students move triangles as directed.
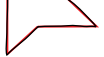
6.*

Sketch of Shape	No. of Sides	No. of Vertices	No. of Right Angles	No. of Lines of Symmetry
	4	4	4	4
	3	3	1	1
	4	4	0	0

7.* Answers will vary. May include the fact that the number of vertices always equals the number of sides.

8.*

Sketch of Shape	No. of Sides	No. of Vertices	No. of Right Angles	No. of Lines of Symmetry
	4	4	2	0
	5	5	1	0
	4	4	0	1
	5	5	2	1

9.* Answers will vary.

Building with Two Triangles

6. Find all the different shapes you can make by putting two triangles together edge to edge. Complete the *Building with Two Triangles* table in your *Student Activity Book:*

   A. Sketch the outline of each shape in the table.

   B. Count the sides, vertices, and right angles of each shape and record the numbers in the table.

   C. Find all lines of symmetry for each shape. Draw them on your shape and write the number in the table. Follow the example.

Sketch of Shape	No. of Sides	No. of Vertices	No. of Right Angles	No. of Lines of Symmetry
Ex.	3	3	1	1

7. Find and describe at least one pattern in your table.

Building with Three Triangles

8. Find all the shapes that can be made by putting three triangles together edge to edge. Complete the *Building with Three Triangles* table in your *Student Activity Book.* Follow the steps in 6A–6C.

9. Find and describe a pattern in your new table.

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*Answers and/or discussion are included in the lesson.