



Cumberland County Schools

Objective 3.01 – Classifying Triangles

Lesson Title: Classifying Triangles
Curriculum Area: Mathematics
Grade: Fifth
Time: 90 minutes

I. PLAN

A. NCSCS Goal 3:

The learner will understand and use properties and relationships of plane figures.

B. NCSCS Objective:

3.01: The learner will identify, define, describe, and accurately represent triangles, quadrilaterals, and other polygons.

C. CCS Task Analysis:

TLW: Identify, define, and describe triangles (right, obtuse, acute, scalene, equilateral, isosceles)

D. CCS Pacing Guide:

Quarter: Third

Week(s): 3-5

E. Lesson Background:

Strand: Geometry

Marzano Level: Analyzing

F. Materials:

- Overhead geoboard
- Geoboards
- Rubber bands
- Geodot paper (*Navigating Through Geometry Grades 3-5*, page 126) or the following website <http://mathforum.org/trscavo/geoboards/dot1.html>
- Transparency of geodot paper (*Navigating Through Geometry Grades 3-5*, page 126)
- Rulers
- Attachments A and B (vocabulary and vocabulary review charts)
- http://community.learnnc.org/dpi/math/archives/2005/06/grades_35_resou_1.php
 - ✓ Scroll down to Resources for Mathematics: Grade Five
 - ✓ Continue scrolling to Classroom Strategies.
 - ✓ Click on Blackline Masters p.57-96.
 - ✓ The triangles are on pages 60-63.

G. Prerequisite Skills:

- Students should possess the knowledge of the terms *right angle*, *acute angle*, *obtuse angle*, and *congruent figures*.

H. Essential Question(s):

- How can a triangle be classified according to its sides and angles?

IMPLEMENT

A. Anticipatory Set:

The teacher will point out examples of triangular objects in the classroom. While pointing out the objects, the teacher will create a list of the objects on the overhead or board. The teacher will discuss what the objects have in common. The teacher will also point out the meaning of the word **triangle** (three angles). The teacher will also brainstorm a list of words that share the **tri** beginning (tricycle, trio, etc.), while explaining how all of the items are the same. (They all have to do with having **three** of something). "Today, boys and girls, we are going to continue looking at triangles and how to classify triangles that are different."

B. Teacher Input: (Attachment B) Math Journal

"First, let's review the vocabulary we need to know before we begin to classify the different types of triangles." The teacher will write the vocabulary words listed below on the board or overhead for the students to copy into their math journals or on their vocabulary word web sheets (Attachment B). As the teacher writes, she/he will read the words aloud to the students. The students will write the terms and definitions at the same time that the teacher writes them. (Adding these terms to a word wall would further enhance the learning.)

- **right triangle** – a triangle that contains one right angle of 90°
- **equilateral triangle** – a triangle with 3 equal angles and 3 equal sides
- **isosceles triangle** – a triangle with 2 equal angles and 2 equal sides
- **scalene triangle** – a triangle with no equal angles and no equal sides

Rehearsal: RallyCoach (Attachment A)

The teacher will give each student pair a set of vocabulary cards (Attachment A). He/she will ask the students to pair off as Student A and Student B. Student A will match each term with the definition first. If Student A is correct, Student B will celebrate the correct answer. If needed, Student B will coach and then celebrate. Reversing roles, the students will shuffle the cards and student B will match the terms with the correct definition. Student A will celebrate. If necessary, Student A will coach and then celebrate.

Teacher Input:

The teacher will explain to the students that during this lesson, they will discover the properties of triangles and how to classify them by their properties. The teacher will review the proper use of geoboards (safety, appropriate use of materials).

Rehearsal: Geoboards and Rubber Bands

The students will individually explore the proper use of geoboards by handling them gently and by stretching the rubber bands low on the pegs.

Teacher Input: Overhead Geoboard and Geodot Paper

"We know that all triangles have three sides, but we also know that all triangles do not look alike." The teacher will model a right triangle on the overhead geoboard. "This is a right triangle because it has a right angle. We know it is a right angle because we can measure it and prove that it is 90 degrees." Point out the right angle. Record on geodot paper on the overhead.

Rehearsal: Geoboards and Rubber Bands

Each student will make a right triangle on his/her geoboard. The teacher will encourage students to make a right angle that is different from the example on the overhead. The students will work with a partner to share their right triangle. Each student will share the name of his/her triangle as well as the attribute, which makes the triangle a particular kind. Student A will show and describe his/her right triangle first. Student B will check, coach if needed, and celebrate. Student B will then show and describe his/her right triangle. Student A will check, coach if needed, and celebrate.

Teacher Input: Overhead Geoboard and Geodot Paper

"We can classify triangles by their angles and their side lengths. If all of the sides are the same length, a triangle is called **equilateral**. If at least two sides are the same length, the triangle is called **isosceles**. If no sides are the same length, the triangle is called **scalene**." The teacher will write *equilateral*, *isosceles*, and *scalene* on the board and show an example of each on the overhead geodot paper.

Rehearsal: Geoboards and Rubber Bands

Each student will make an isosceles, scalene, and equilateral triangle on his/her geoboard. The students will work with a partner to share their triangles. Each student will share the name of his/her triangle as well as the attribute that makes the triangle a particular kind. Student A will show and describe one triangle first. Student B will check, coach if needed, and celebrate. Student B will then show and describe one triangle. Student A will check, coach if needed, and celebrate. The process will continue until each student has shared each of the three triangles with his/her partner.

C. Guided Practice: (Geodot Paper <http://mathforum.org/trscavo/geoboards/dot1.html>) RallyCoach

The students work in pairs to draw the four different types of triangles on the geodot paper. The students will label each of the triangles. Student A will create a triangle and classify it verbally by sides and angles. Student B will check, coach if necessary, and celebrate Student A's classification. They then switch roles and Student B will create a triangle and classify it verbally by sides and angles. Student A will check, coach if necessary, and celebrate Student B's classification.

D. Closure: (Overhead Transparency of Attachment B) Show Me

The teacher will prompt the students to create a particular kind of triangle by stating the name of a triangle (i.e., right, scalene, isosceles, or equilateral) or by stating the definition of a triangle (i.e., a triangle that contains one right angle of 90°). The students will create the triangle on their geoboards and hold up the board for the teacher to see.

E. Independent Practice:

The teacher should prepare many triangles to be cut, pasted, and classified. For examples, go to http://community.learnnc.org/dpi/math/archives/2005/06/grades_35_resou_1.php. Scroll down to Resources for Mathematics: Grade Five. Continue scrolling to Classroom Strategies. Click on Blackline Masters p.57-96. The triangles are on pages 60-63. All students will need their protractors and rulers to help them.

Differentiated Assignment:**Advanced Learners:**

Using the triangles from the above website, the students will work in pairs to cut, paste, and classify at least eight triangles. The students will write a letter to a friend describing the four different types of triangles.

Proficient Learners:

Using the triangles from the above website, the students will work in pairs to cut, paste, and classify at least six triangles. The students will write four sentences. Each sentence will describe the characteristics of one of the four triangles.

Strategic Learners:

Using the triangles from the above website, the students will work in pairs to cut, paste, and classify at least five triangles. The students will then play the game *concentration* using the vocabulary cards.

Intensive Learners:

Using the triangles from the above website, the students will work in pairs to cut, paste, and classify at least four triangles. The students will visit the following website: <http://www.teachers.ash.org.au/jeather/maths/dictionary.html>. This website allows the students to create the different types of triangles.

III. ASSESS:**A. Products:****B. Diagnostic (see background):****C. Pre-Assessment:****D. Post Assessment (EOG format plus 2 open-ended):****IV: RESOURCES:****A. Websites:**

- http://community.learnnc.org/dpi/math/archives/2005/06/grades_35_resou_1.php. Follow steps under "Independent Practice" above.
- <http://www.teachers.ash.org.au/jeather/maths/dictionary.html>

B. Materials:**C. Professional Development Opportunities:**

Vocabulary

right triangle	a triangle that contains one right angle of 90°
equilateral triangle	a triangle with 3 equal angles and 3 equal sides
isosceles triangle	a triangle with 2 equal angles and 2 equal sides
scalene triangle	a triangle with no equal angles and no equal sides



