Classifying Triangles

Materials:
A variety of triangle models (6-8) labeled with letters
Enlarged charts of triangle classification matrix:
- One with columns labeled “scalene”, “isosceles”, “equilateral”
- One copy of the original grid
Triangular Tables with blank table and blank grid
33 copies of Triangular Tiles task
Painter’s tape

4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. **CA=** (Two-dimensional shapes should include special triangles, e.g., equilateral, isosceles, scalene, and special quadrilaterals, e.g., rhombus, square, rectangle, parallelogram, trapezoid.)

Day 1 Lesson:
- Handout student worksheets.
- Display table with side length categories (scalene, isosceles, equilateral).
- Tell students that I will be placing triangles on the chart. They are to predict where the triangle will be placed and mark the letter on their handout.
  - Hold up first triangle
  - Think/Pair → write the on their paper
  - I place triangle in correct position
  - “Why does this triangle belong here?”
  - Pair discuss placement
- Repeat for several triangles until class murmurings sound correct.
  - Ask whole group to explain the categories
- Turn to full grid.
  - Have students predict where each triangle will go on the new grid, making markings on their worksheet. T/P
  - Share: Volunteers defend the placement of one triangle at a time.
- Collect worksheet.
- If time, complete Triangular Tiles task.
Materials:
Enlarged charts of triangle classification matrix
   ● One with A-H triangles already in place
   ● One blank grid
Enlarged copies of triangles 1 & 2 (from task)
Dividing Shapes into Triangles worksheet
Rulers (or other straight edges)
Document Camera
Projector & Screen

Day 2
Activate prior learning:
   ● Display grid from previous lesson, with all 8 triangles correctly placed.
   ● Say: We defined triangle attributes last week, but I neglected to keep that
     poster. What were the definitions again?
     ○ Think/Pair/Share
   ● Write brief definitions on poster.
     ○ Acute: less than 90°
     ○ Right: 90°
     ○ Obtuse: greater than 90°
     ○ Scalene: 0 sides congruent
     ○ Isosceles: 2 sides congruent
     ○ Equilateral: all sides congruent
   ● Also add labels: “sides” and “angles” to the grid.

Re-Engage:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

   ● Display new blank grid with all 9 squares
   ● Place triangle #1 in each D - E - F. Say:
○ Many students placed triangle #1 in each of these boxes. For each placement, what did the student understand? What didn’t they understand?
  ■ Think-Pair-Share
    ● What is obtuse? Why not acute?
○ Where is the correct placement? How do you know?
● Place triangle #2 in each B - E - G (one at at time)
  ○ Many students placed triangle #2 in this box. What did the students understand? What didn’t they understand?
  ■ Think-Pair-Share
  ○ Where is the correct placement? How do you know?

Extension:
● Hand out Dividing Shapes into Triangles worksheet and rulers.
● Give Directions
  ○ “The figures at the top of the paper are a square and a rectangle.”
  ○ Work with your partner.
  ○ Use the straight edge to see what types of triangles you can create by dividing the shapes on the sheet. Label the triangles you create.
● Allow time to explore. After several minutes ask:
  ○ Do your lines need to be from vertex to vertex, or can you start a line somewhere else in the figure?
● After further exploration…
  ○ From what shapes can you make a:
  ■ Right isosceles?
  ■ Acute isosceles?
  ■ Right scalene?
  ■ Obtuse scalene?
  ■ Triangle with 3 obtuse angles?