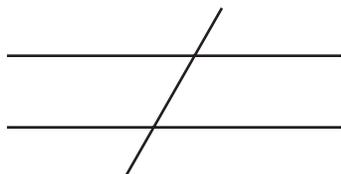


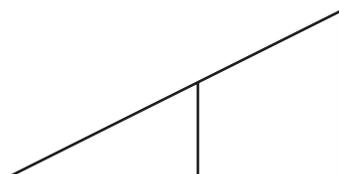
The Quest for the Mighty Transversal

Inspired by Steven Carter, Memphis, TN

The objective of this lesson is to develop the students' ability to identify the various types of angles that are associated with parallel lines and transversals, and to help them understand their properties. Any teacher who has taught geometry for a number of years knows that students can readily identify angles in simple diagrams, but have great difficulty in more complex diagrams as shown below.



Students can easily identify corresponding angles here.



Students struggle identify corresponding angles here.

Concepts

Parallel lines cut by a transversal, corresponding angles, alternate interior & exterior angles, consecutive interior angles, angle measure

Time: 1 day

Materials

Protractor, student handout

Preparation

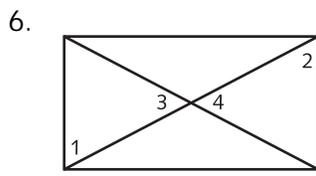
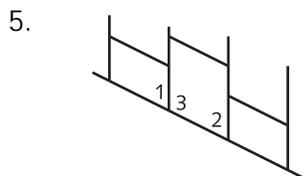
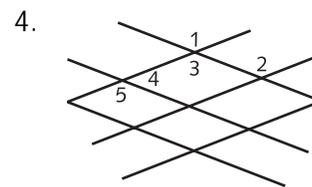
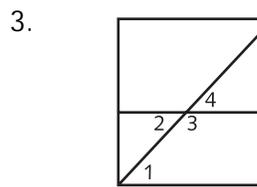
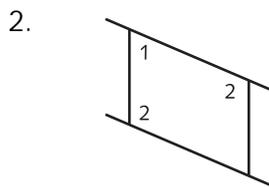
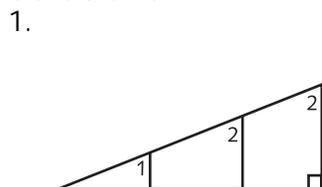
For a more powerful lesson, find similar objects and patterns on your own campus, and customize a student handout for your classes.

Lesson Plan

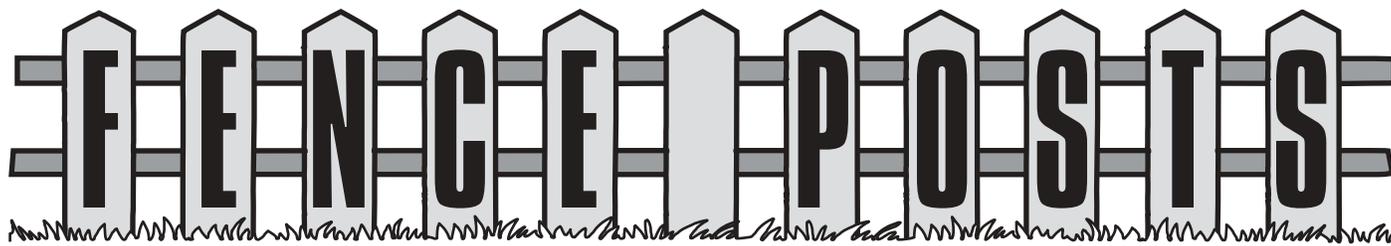
The intent of the lesson is to find common objects on campus that display parallel lines cut by a transversal. As you can see in question #3, a typical chain link fence offers many of the types of angles that the students are required to study. It is enormously powerful to have the students actually measure these physical objects, so the instructor is encouraged to customize a students handout for their campus. If that is not possible, the students can still greatly benefit from measuring the diagrams in this lesson.

It is very important that the students first identify and label (number) the designated angels in each question. Discuss this publicly, and then have the students measure the diagrams/objects. They should record the measurements directly on the diagram. Do these measures support the properties studied? (e.g. corresponding angles are equal when the lines are parallel)

Solutions



7. The students should estimate, not measure, these angles. The question is designed to assess whether or not they understand the following principles: Triangle Sum and Linear Sum (180 degrees), complimentary angles (90 degrees), alternate interior and corresponding angles (equal).

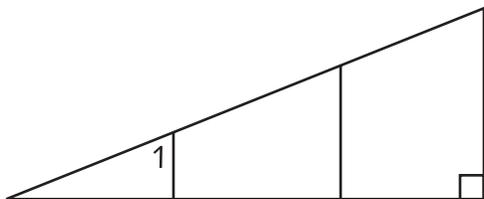


The Quest for the Mighty Transversal

For each of the following, imagine the object on campus and measure an example of the requested angles. (Do not measure any right angles.) Then label the angles and record the measurements in the given diagram.

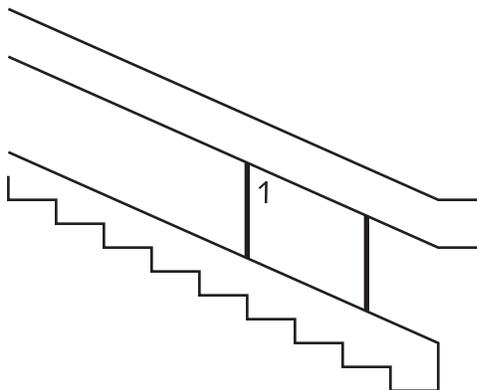
1. Ramp to a Portable Classroom

corresponding $\angle 1$ & $\angle 2$



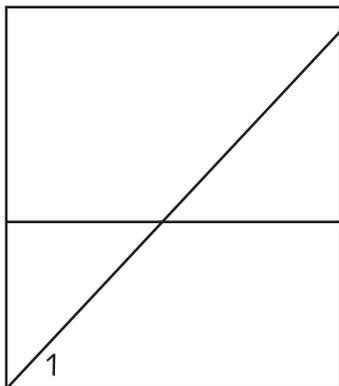
2. Railing along Concrete Stairs

consecutive interior $\angle 1$ & $\angle 2$



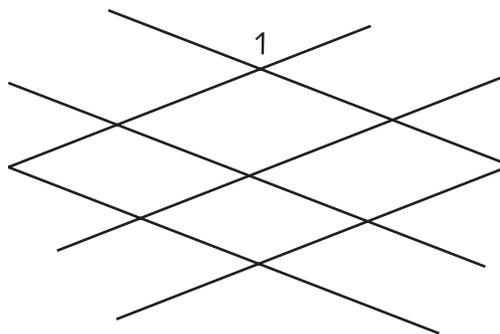
3. Chain Link Gates

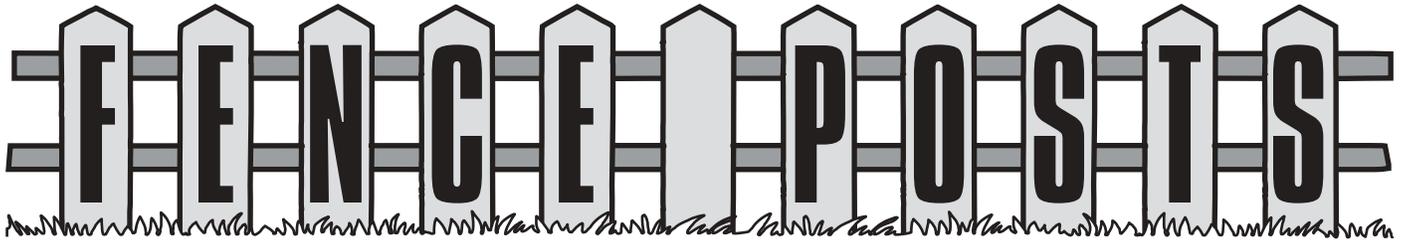
alternate interior $\angle 1$ & $\angle 2$
consecutive interior $\angle 1$ & $\angle 3$
corresponding $\angle 1$ & $\angle 4$



4. Cafeteria Table Top

corresponding $\angle 1$ & $\angle 2$
alternate interior $\angle 2$ & $\angle 3$
consecutive interior $\angle 3$ & $\angle 4$
alternate exterior $\angle 1$ & $\angle 5$

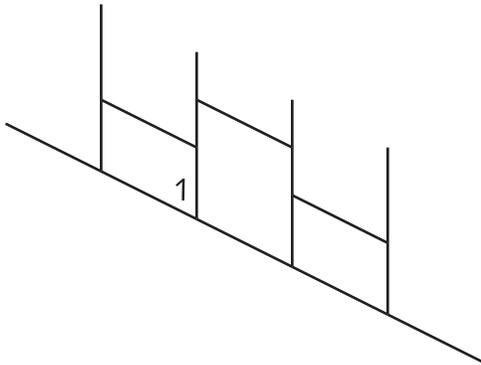




The Quest for the Mighty Transversal

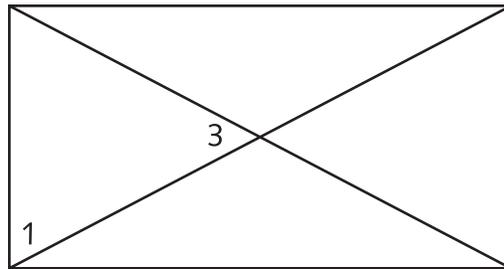
5. Brick Wall along Long Ramp

corresponding $\angle 1$ & $\angle 2$
consecutive interior $\angle 2$ & $\angle 3$
linear pair $\angle 1$ & $\angle 3$



6. Bleachers

Alternate interior $\angle 1$ & $\angle 2$
Vertical $\angle 3$ & $\angle 4$



7. Rafters

Estimate all angles. DO NOT measure.

