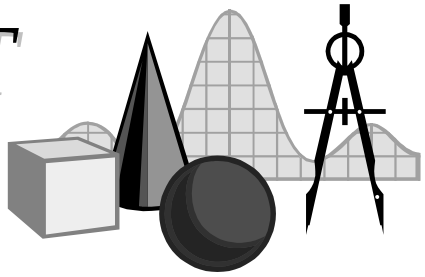
TAKE IT TO THE MAT

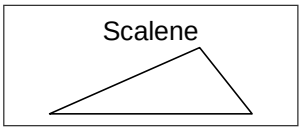
A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION

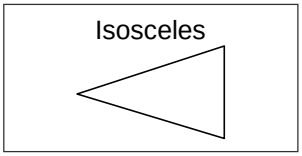


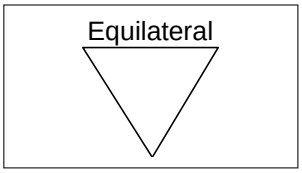
Math Audit Team
Regional Professional Development Program
January 24, 2000 — Elementary Edition

This is the inaugural issue of *Take It to the MAT*, a newsletter about mathematical topics often taught, but needing a little polish. It is the Math Audit Team's goal that *Take It to the MAT* serve as a resource to teachers of all levels.

Geometry is a major strand in the elementary curriculum. One of the objectives that students must meet in their program of study is that of identifying plane figures. While students do well with identifying triangles, rectangles, and circles, some of the finer points of these and other figures are overlooked.

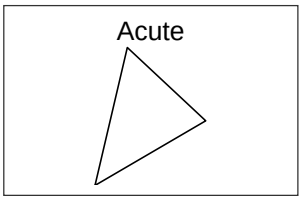




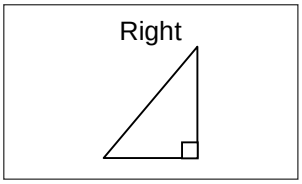


In this issue, we'll examine the simple triangle. Triangles can be classified either by the length of the sides (scalene, isosceles, equilateral) or the measures of their angles (acute, right, obtuse).

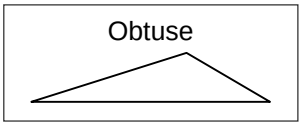
Scalene: A triangle with no sides equal in length.
Isosceles: A triangle with at least two sides equal in length.
Equilateral: A triangle with all three sides equal in length.
Acute: A triangle with all angles measuring less than 90°.
Right: A triangle with one right angle (90°).
Obtuse: A triangle with one angle greater than 90°.



Consider the terms describing the sides. Either a triangle is scalene or it is not. There is no third possibility. So, if a triangle is not scalene, it must be isosceles and/or equilateral. That's right, it can be both. *If a triangle is equilateral, then it is also isosceles. However, not all isosceles triangles are equilateral.* Read the last two sentences again.



In terms of the angles, a triangle can only be one of the three types. Recall that the sum of the interior angles of a triangle must be 180°. If a triangle is obtuse—with one angle over 90°—the other angles must total less than 90°, so each must be less than 90°. If a triangle is right—with one 90° angle—the other angles must sum to 90°, and therefore each must be less than 90°.



A visual note. In the drawings shown, not all of the triangles are drawn with a horizontal segment, particularly at the bottom. Students should see and draw triangles in all orientations and still be able to classify them.

Lastly, since triangles can be classified both according to sides and angles, they *may* have two names. For example, a figure may be an isosceles, acute triangle, or a scalene, obtuse triangle. Students should be encouraged to explore whether any or every combination is possible. For example, is it possible to construct an equilateral, right triangle?