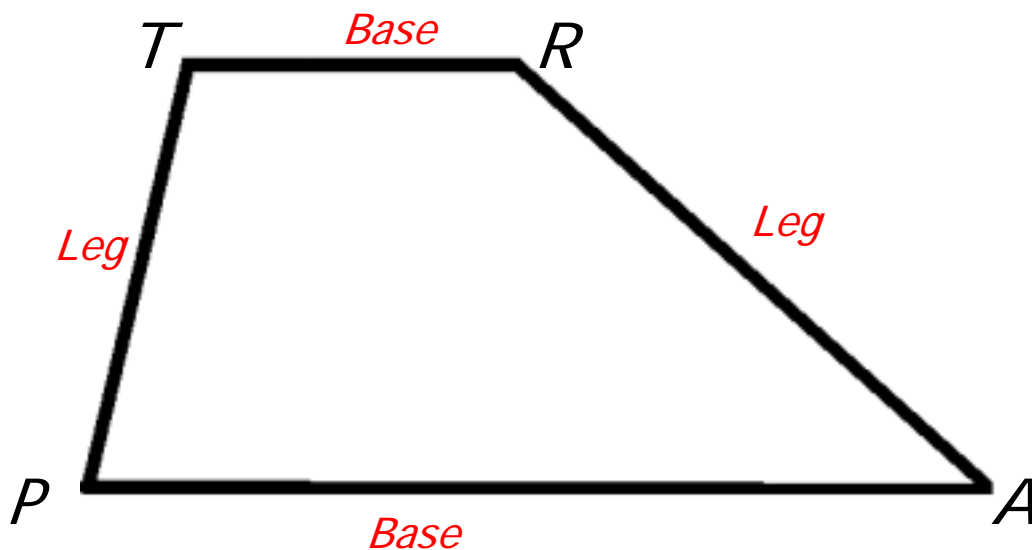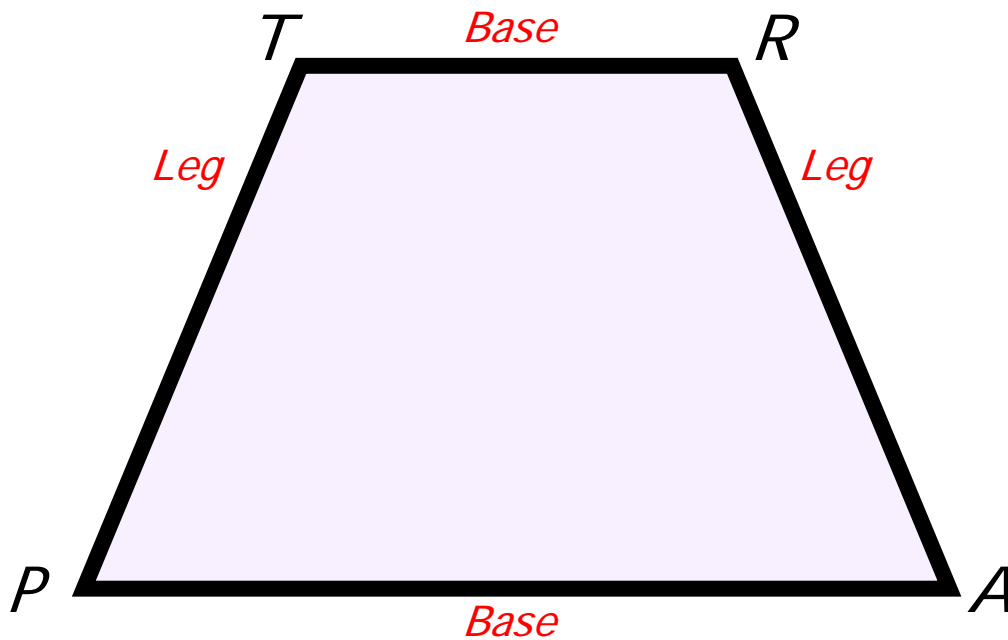# Lesson 17

Trapezoids

Today we look at another special quadrilateral—
Trapezoids!

Definition:

> A **Trapezoid** is a quadrilateral with exactly <u>one</u> pair of parallel sides.

If the two legs of the trapezoid are congruent, then the trapezoid is an _____ trapezoid.

Isosceles Trapezoids have special properties:
 1. Both pairs of base angles are congruent.

 2. The diagonals are congruent.

Example:

The measures of a pair of base angles of an isosceles trapezoid are $7x - 12$ and $5x + 6$. Find the value of x.

Example:

The measures of two base angles on the same side of a trapezoid are $10x + 7$ and $6x - 3$, respectively. What is the measure of the larger base angle? (HINT: The base angles in a trapezoid are formed by two parallel lines cut by a transversal.)

Example:

An isosceles trapezoid has vertices at (-1, 5), (2, 2), (0, -4), and (-7, 3). Find the measure of each diagonal.
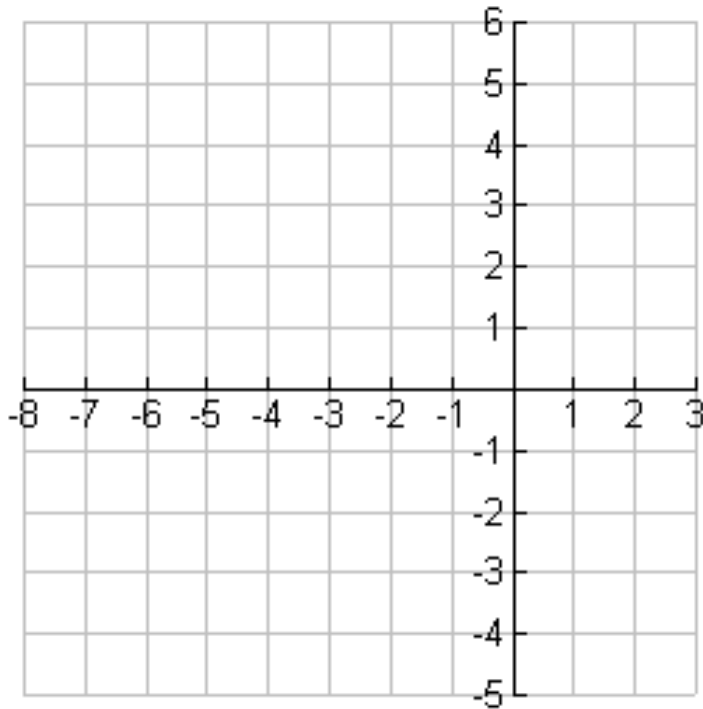
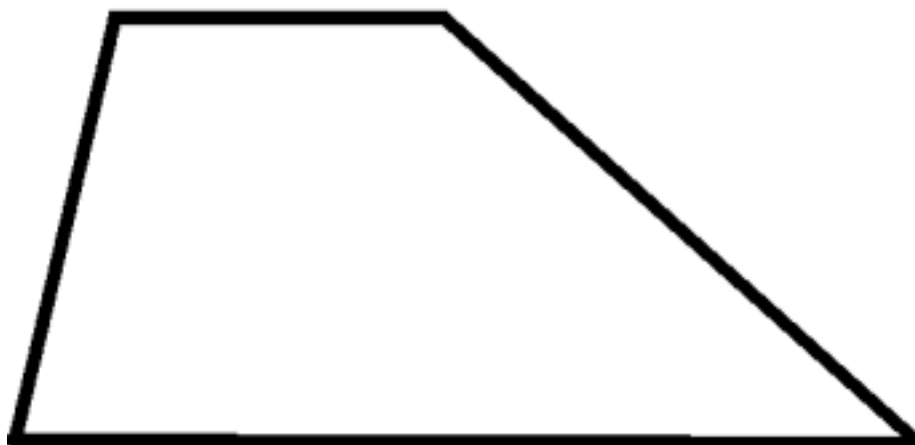There is another special segment in a trapezoid that can be drawn—the _____.

Definition:

A **Median** of a trapezoid is the segment that joins the midpoint of its legs.

The median has a special relationship to the bases—*it is always parallel to them* (even for non-isosceles trapezoids).
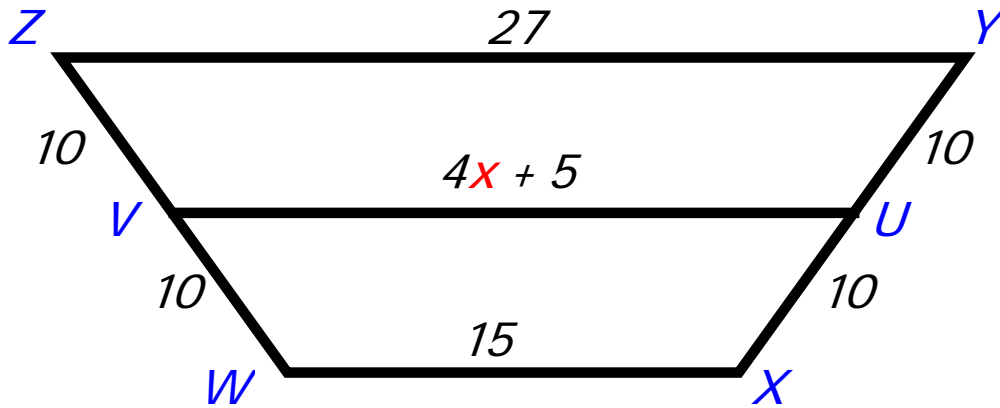AND. . .
The measure of the median is always *one-half the sum of the measures of the bases!!!*

Example:

Given that $\overline{VU}$ is the median of trapezoid ZYXW, find the value of x.

Z   27   Y

10   4x + 5   10

V   U

10   15   10

W   X

Say What??!!

Food

Some cafeteria trays are shaped like isosceles trapezoids so they will save space and fit around tables.

If the measures of one pair of base angles of a tray are 120 degrees, what are the measures of the other pair of base angles?

Mr. Korpi, 2006-2007