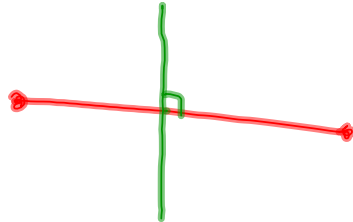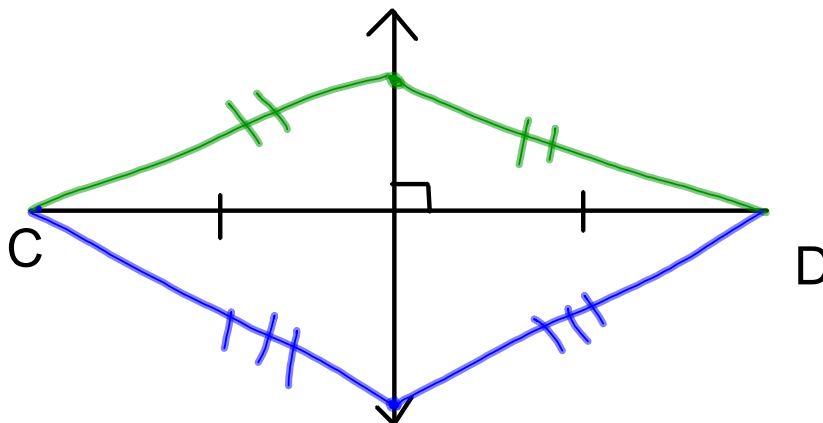Geom

5-1 Bisectors, Medians, &
Altitudes

Perpendicular Bisector:

* A line, segment, or ray that passes through the midpoint of the segment and is perpendicular to the segment.

Points on Perpendicular Bisectors:

**Property 1:

Any point on the perpendicular bisector of a segment is equidistant from the endpoints of the segment.

C

D

Property 2:
  *Any point equidistant from the endpoints
    of a segment lies on the perpendicular
    bisector of the segment.

A triangle has 3 sides, therefore there are 3
perpendicular bisectors in a triangle.

The perpendicular bisectors of a triangle
intersect at a common point.

Concurrent Lines:
  * When 3 or more lines intersect at a
    common point.

Point of Concurrency:
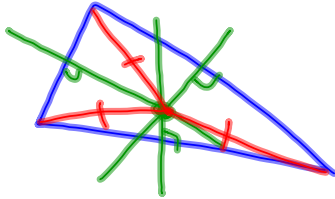 * The point where the 3 or more lines
    intersect.

Circumcenter:
  * The point of concurrency of the
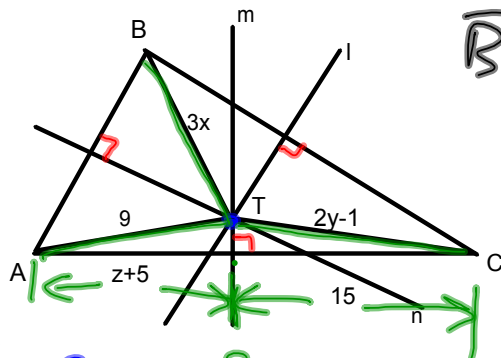   perpendicular bisectors of the triangle.

Circumcenter Theorem:
* The circumcenter of a triangle is equidistant from the vertices of the triangle.
* See top of page 239

1.) Lines m, n, and l are perpendicular bisectors of △ ABC and meet at T. Find x, y, z.

$\overline{BT} \cong \overline{CT} \cong \overline{AT}$

$3x = 9$

$\boxed{X = 3}$

$2y - 1 = 9$
$\quad +1 \quad +1$
$2y = 10$
$\boxed{Y = 5}$

$Z + 5 = 15$
$\boxed{Z = 10}$

Angle Bisector:
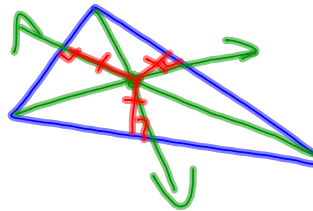 * A line, segment, or ray that cuts an angle
    in half.

 Points on Angle Bisectors:
  * Any point on the angle bisector is
     equidistant from the sides of the angle.
  * Converse is true also.

Incenter:
   * Where the 3 angle bisectors meet in a
     triangle.
   * It is the point of concurrency for the angle
     bisectors.

Incenter Theorem:
  * The incenter of a triangle is equidistant
    from each side of the triangle.
  * See page 240

Types of lines	Concurrent at...	Special Feature
Perpendicular Bisector	Circumcenter	equidistant from the vertices of the triangle
Angle Bisector	Incenter	equidistant from the sides of the triangle