

1-5 Geometry Lab: Constructing Perpendiculars

a. Construct a line perpendicular to line ℓ and passing through point P on ℓ .

Step 1



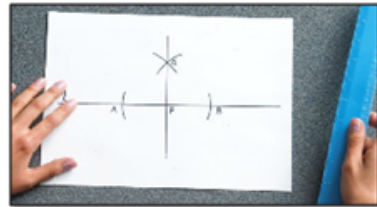
Place the compass at P . Draw arcs to the right and left of P that intersect line ℓ using the same compass setting. Label the points of intersection A and B .

Step 2

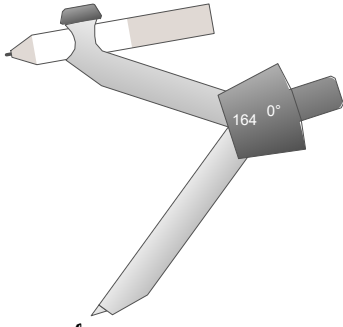
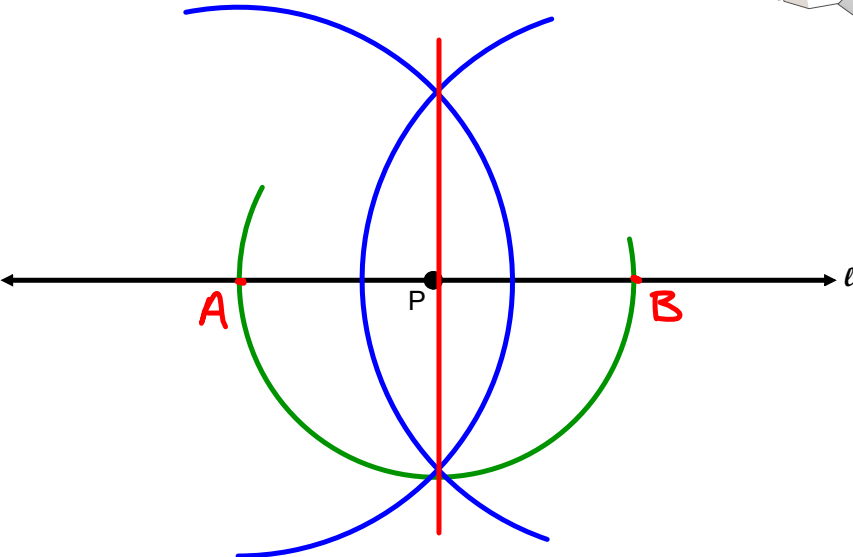
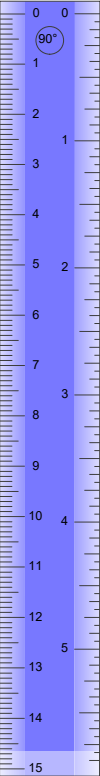


With the compass at A , draw an arc above line ℓ using a setting greater than AP . Using the same compass setting, draw an arc from B that intersects the previous arc. Label the intersection Q .

Step 3



Use a straightedge to draw \overleftrightarrow{QP} .



b. Construct a line perpendicular to line k and passing through point P not on k .

Step 1



Place the compass at P . Draw an arc that intersects line k in two different places. Label the points of intersection C and D .

Step 2

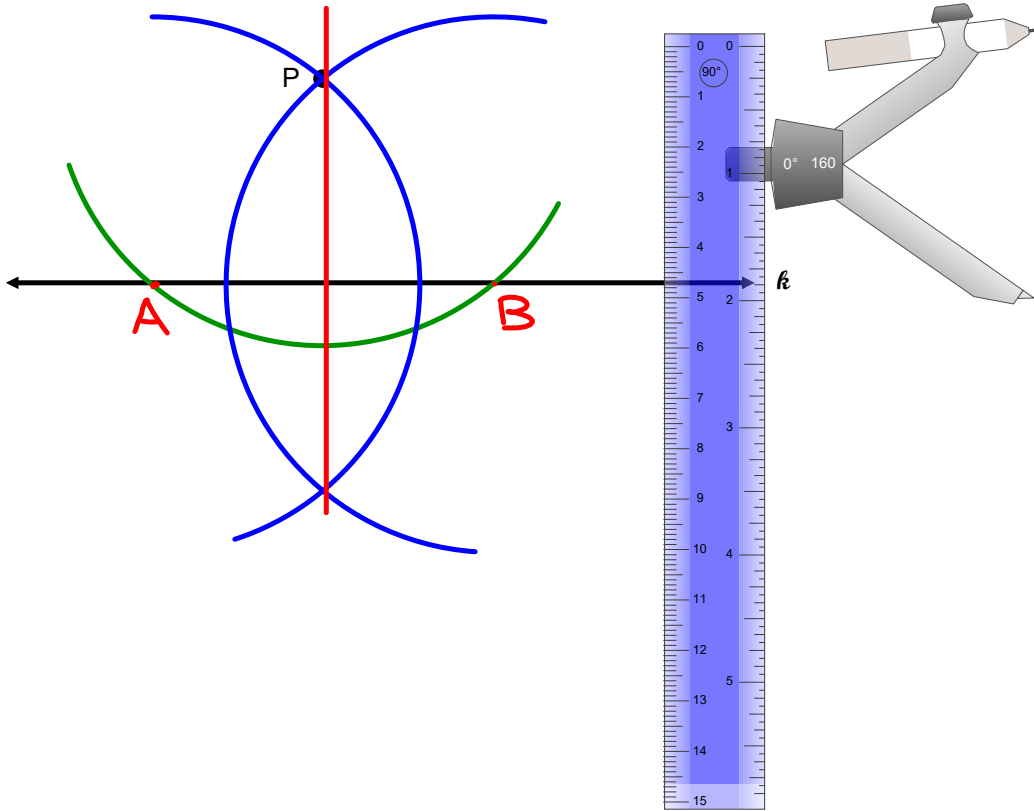


With the compass at C , draw an arc below line k using a setting greater than $\frac{1}{2}CD$. Using the same compass setting, draw an arc from D that intersects the previous arc. Label the intersection Q .

Step 3



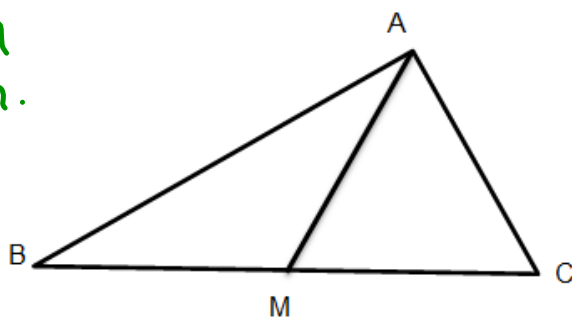
Use a straightedge to draw \overleftrightarrow{PQ} .



Other Constructions

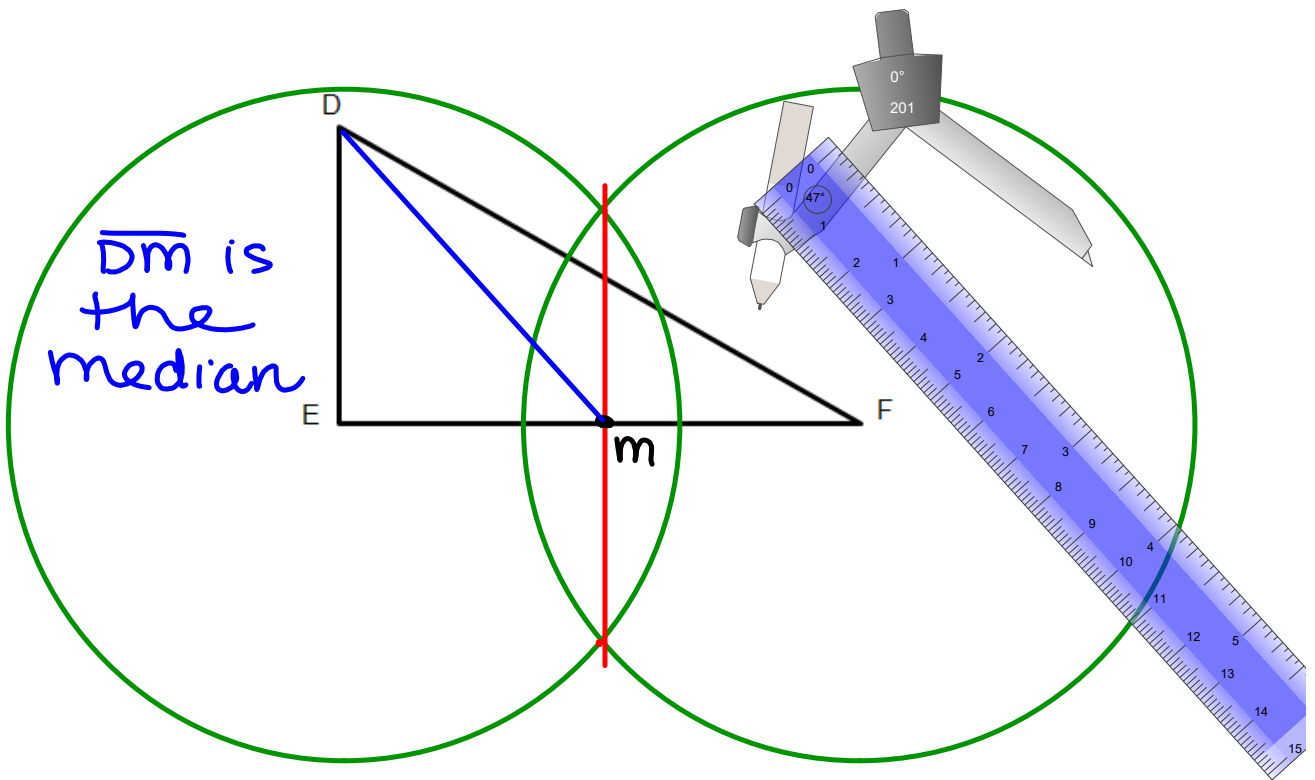
Median: A segment in a triangle drawn from a vertex to the midpoint of the opposite side.

median \overline{AM}
is drawn.



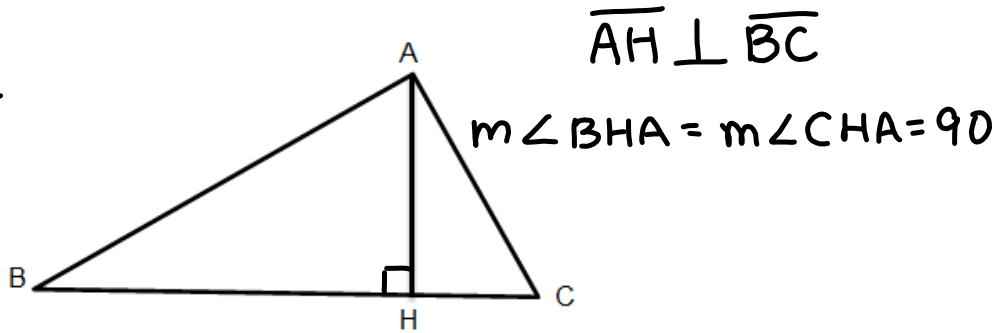
Necessary construction: Bisect a line segment.

Find, by construction, the median of $\triangle DEF$ from D to \overline{EF} .

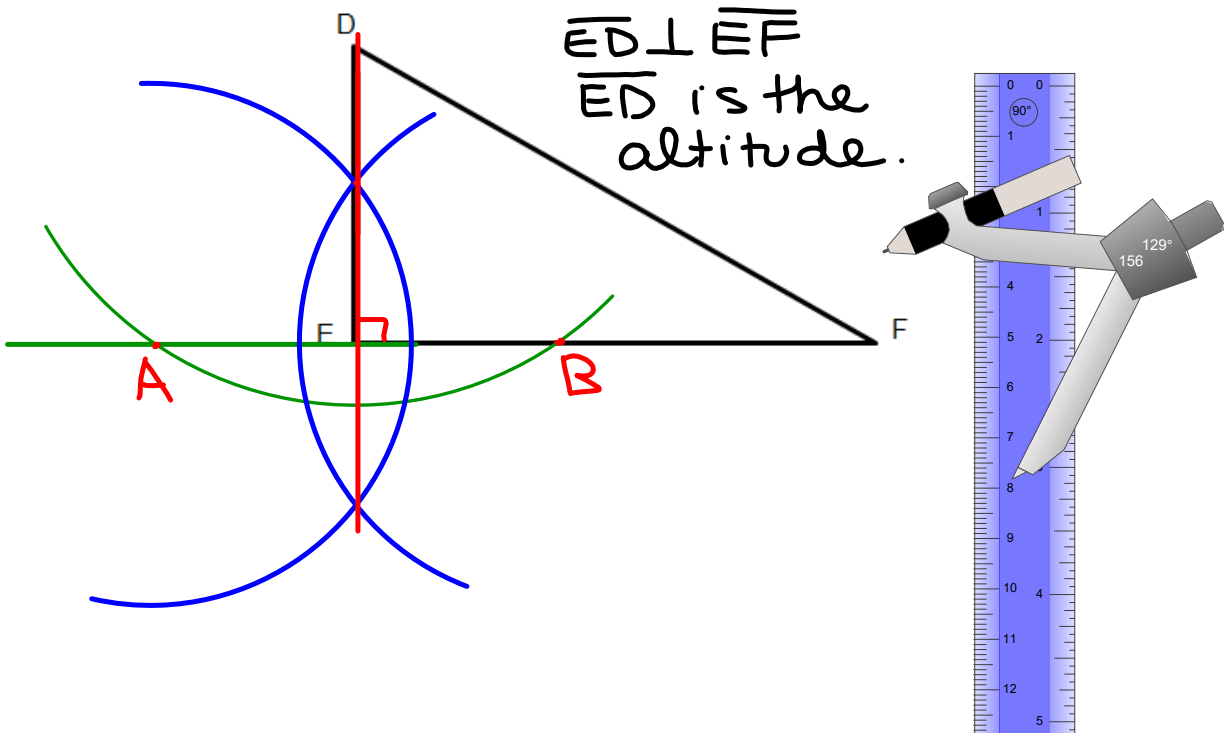


Altitude: Segment in a triangle drawn from a vertex perpendicular to the opposite side.
(height)

\overline{AH} is the altitude from A to side \overline{BC} in $\triangle ABC$.



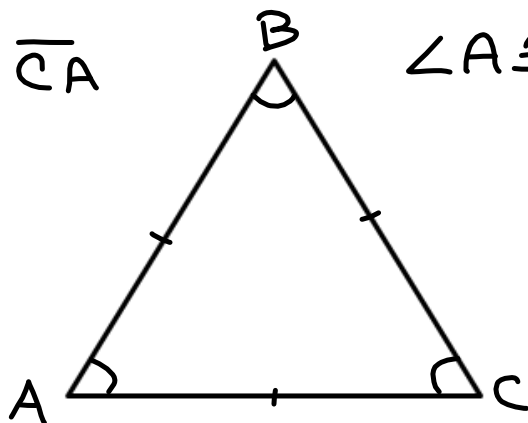
Necessary construction: Perpendicular line through a point not on the line.
 Find, by construction, the altitude of $\triangle DEF$ from D to \overline{EF} .



Equilateral triangle: A triangle having 3 congruent sides and 3 congruent angles.

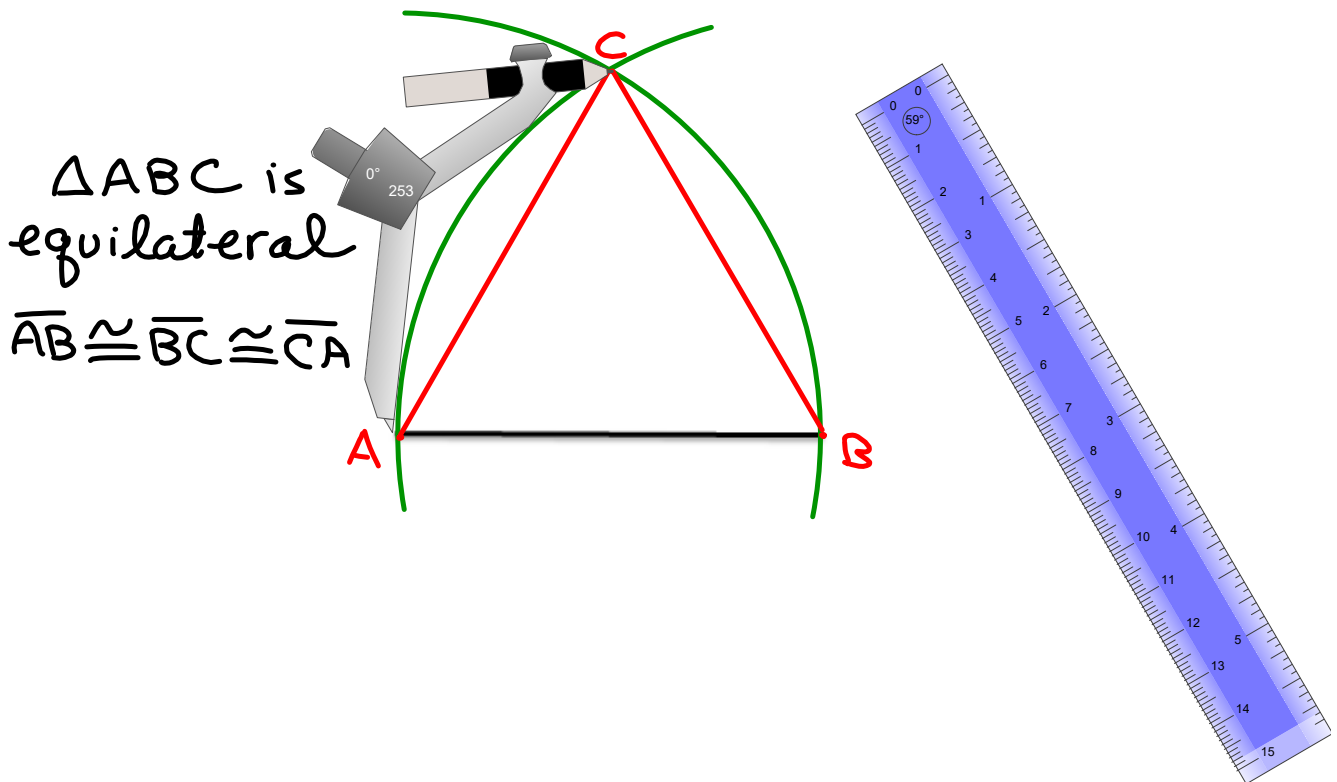
$$\overline{AB} \cong \overline{BC} \cong \overline{CA}$$

$$\angle A \cong \angle B \cong \angle C$$



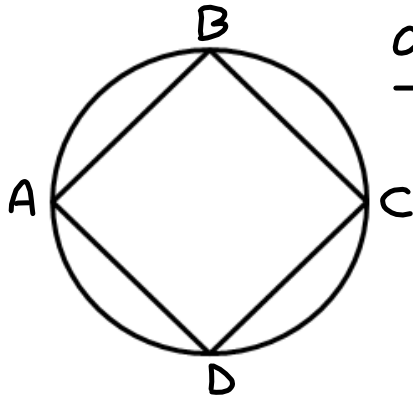
Necessary construction: copy a line segment.

Construct an equilateral triangle using the given segment as one of its sides.



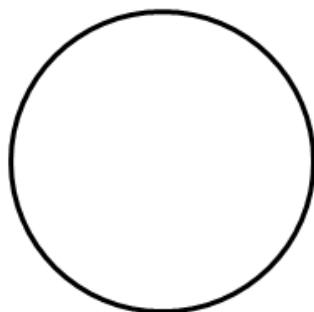
Inscribe: To draw something inside
of something else.

This is a square inscribed
inside of a circle.



all vertices
touch the
circle.

Necessary construction: perpendicular line through a point
Construct a square inscribed within this circle. on a line.



see next
page →

ACBD IS
a square.

