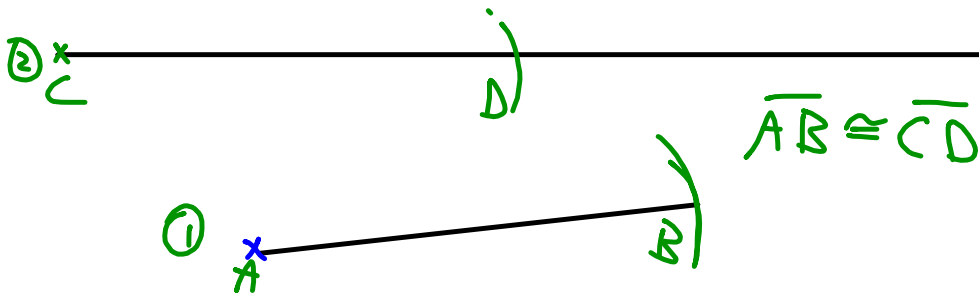


12.3 Constructions

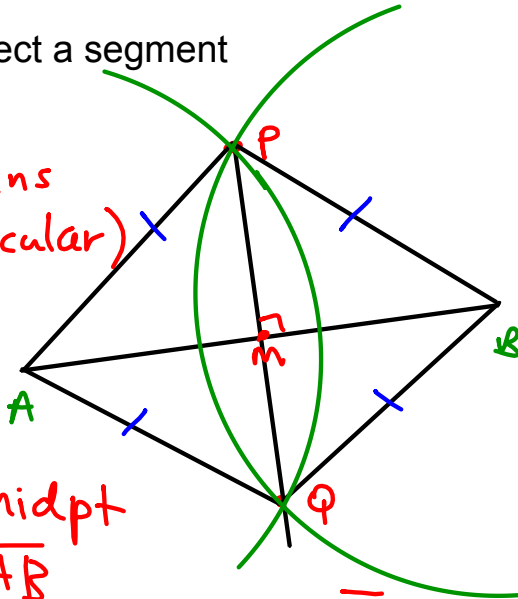
(with compass and straight edge)

1. Copy a segment



2. Bisect a segment

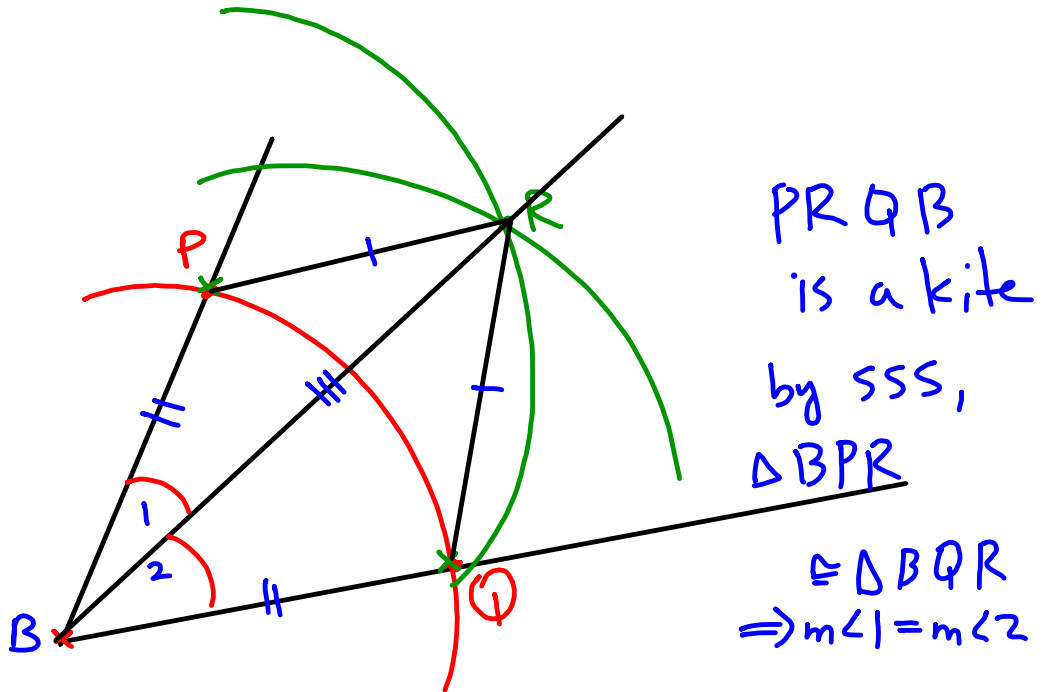
(\perp means perpendicular)



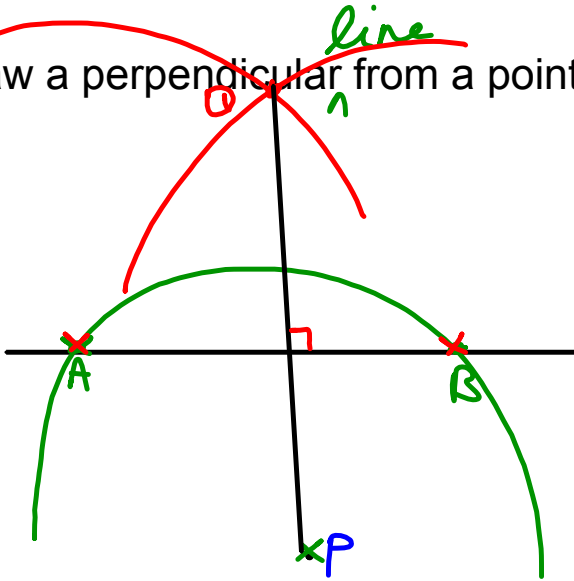
- M is midpoint of \overline{AB}
- \overline{PQ} is \perp bisector of \overline{AB}

$APBQ$ is a rhombus
 \overline{AB} and \overline{PQ}
 are diagonals
 of rhombus
 $\Rightarrow \overline{AB} \perp \overline{PQ}$

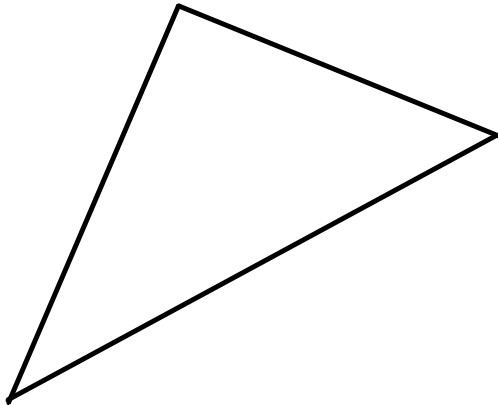
3. Bisect an angle



4. Draw a perpendicular *line* from a point to a segment

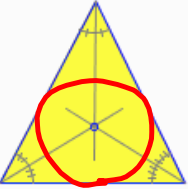
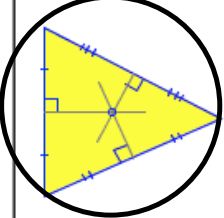
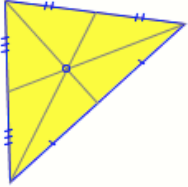
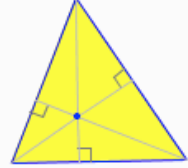


5. Create the incenter of a triangle.



There are four types of centers for triangles:

ir

	<p style="text-align: center;">Incenter Located at intersection of the angle bisectors.</p> <p style="text-align: center;">See Triangle incenter definition and How to Construct the Incenter of a Triangle</p> <p style="text-align: center;"><i>center of inscribed circle</i></p>
	<p style="text-align: center;">Circumcenter Located at intersection of the perpendicular bisectors of the sides</p> <p style="text-align: center;">See Triangle circumcenter definition and How to Construct the Circumcenter of a Triangle</p> <p style="text-align: center;"><i>center of circumscribed circle</i></p>
	<p style="text-align: center;">Centroid Located at intersection of the medians</p> <p style="text-align: center;">See Triangle centroid definition and Constructing the Centroid of a Triangle.</p>
	<p style="text-align: center;">Orthocenter Located at intersection of the altitudes <i>(heights)</i></p> <p style="text-align: center;">See Triangle orthocenter definition and Constructing the Orthocenter of a Triangle.</p>

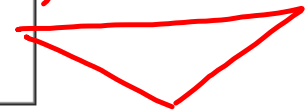
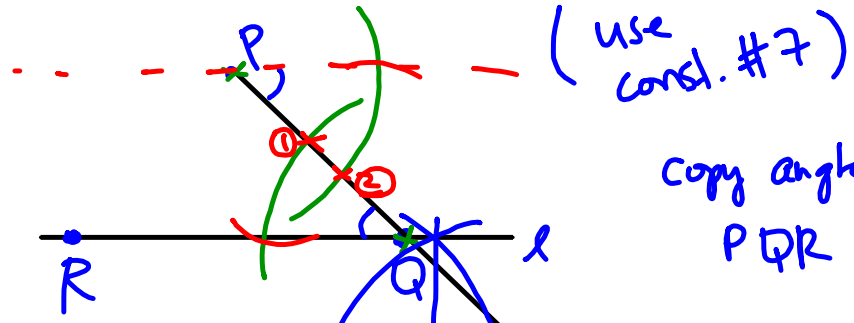


Table taken from <http://www.mathopenref.com/trianglecenters.html>

height (altitude) of a triangle is line segment that connects vertex to its opp. leg perpendicularly

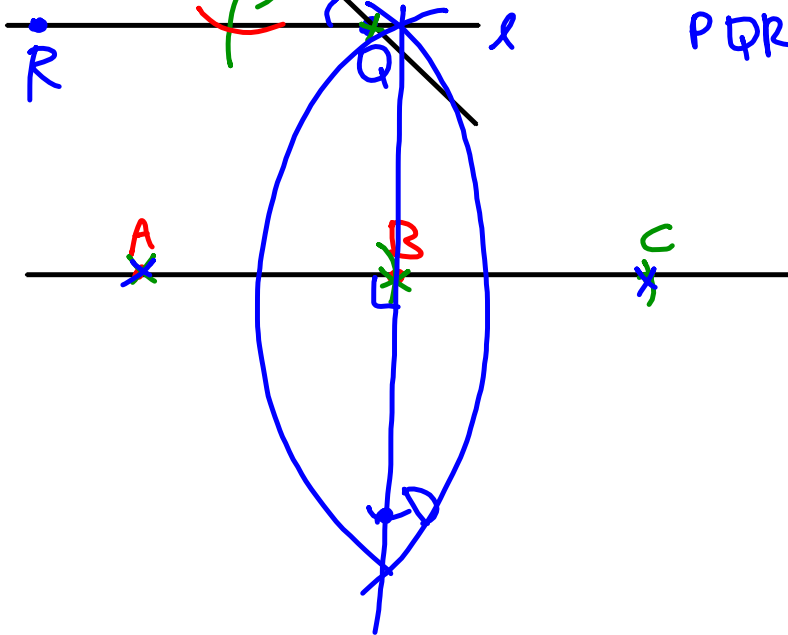
HW

12.3A #1 a)

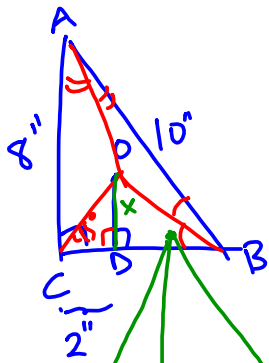


12.3A #6

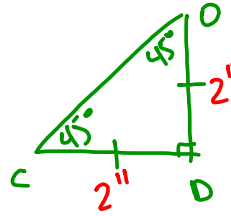
$AB = BC$



12.3A#8)

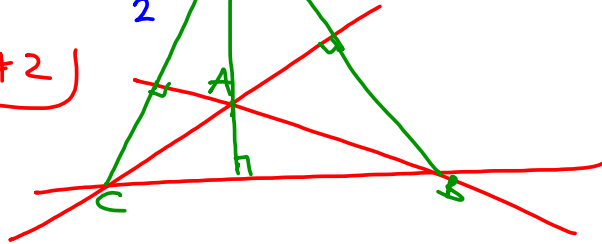


incenter: intersection pt of angle bisectors

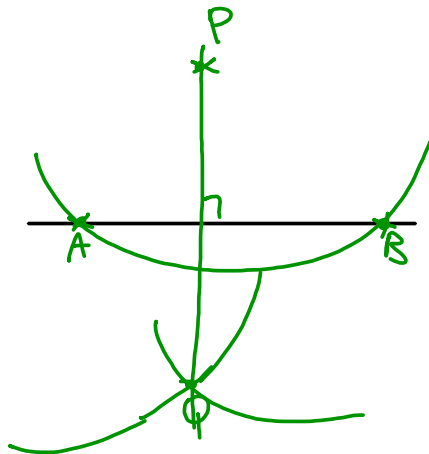


12.3B#2)

use Const. #6 3 times

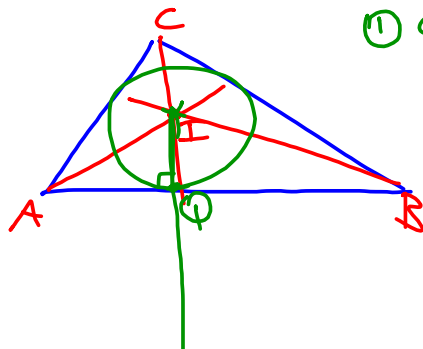


practice Const #6



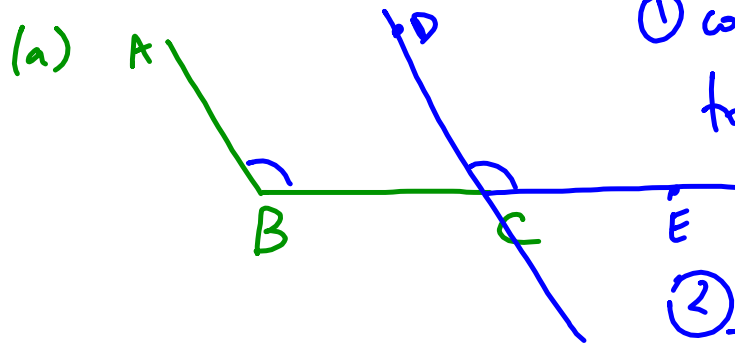
12.3A#4)

incenter: intersection of angle bisectors



- ① const all angle bisectors
- ② const #6 to create \perp line thru I & \overline{AB}
- ③ draw circle center = I radius is IQ

12.3A #7)



① copy $\angle ABC$
to $\angle DCE$

② construct D
 \overline{CD} to be
 \cong to \overline{BA}

③ connect A to D

idea 2:

