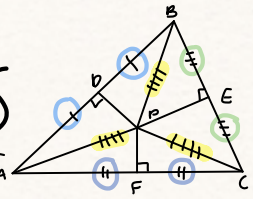
CENTERS OF TRIANGLES

Circumcenter



The perpendicular bisector of the sides of a triangle intersect at a point called the circumcenter.

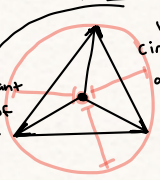
Latin: around + center

The circumcenter is always equidistant from the vertices of the triangle.

circle. a point

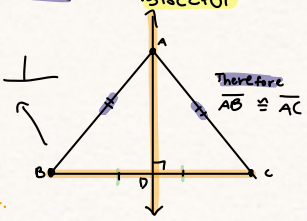
Three sides are the same length.

the radius of a circle is all the same length all around the circle from the center.



Perpendicular Bisector

If $\overleftrightarrow{AB} \perp \overline{BC}$ and $\overline{BD} \cong \overline{DC}$ THEN $\overline{AB} \cong \overline{AC}$

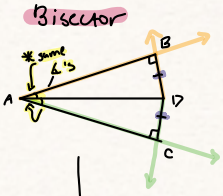


Same for perpendicular bisector & converse for it.

changes for THEN for each other.

very cool indeed

Angle Bisector

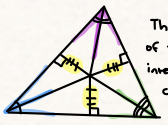


If $\overline{AD}$ bisects $\angle BAC$, $\overline{AB} \perp \overline{BD}$, and $\overline{AC} \perp \overline{DC}$ THEN $\overline{BD} \cong \overline{CD}$

Therefore $\overline{BD} \cong \overline{CD}$

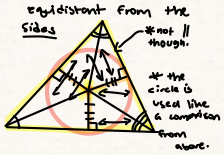
don't get back pain :D!

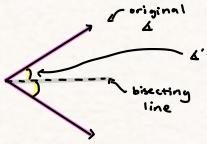
Incenter



The angle bisectors of the ∠'s of a triangle intersect at a point called the incenter.

The incenter is always equidistant from the sides

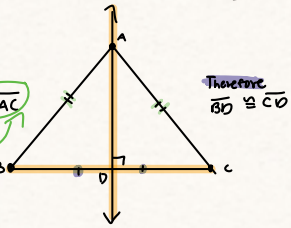




def of ∠ bisector

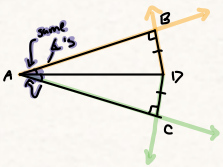
CONVERSES:

Perpendicular bisector CONVERSE



If $\overleftrightarrow{AB} \perp \overline{BC}$, and $\overline{AB} \cong \overline{AC}$ THEN $\overline{BD} \cong \overline{DC}$

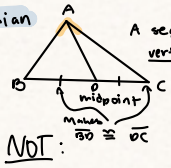
Angle bisector CONVERSE



If $\overline{BD} \cong \overline{CD}$, $\overline{AB} \perp \overline{BD}$, $\overline{AC} \perp \overline{DC}$ THEN $\overline{AD}$ bisects $\angle BAC$

I was confused lol

Median

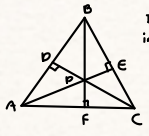


A segment joining a vertex to the midpoint of the opposite side.

NOT:

- perpendicular to the vertex

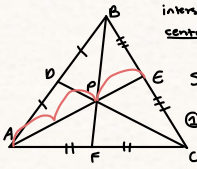
Orthocenter (last one)



The three altitudes of a triangle intersect at a point called the orthocenter

☆ Not used to solve!! just a necessary term.

Centroid



The three medians of a triangle intersect at a point called the centroid.

SPECIAL PROPERTIES:

① 2 of PE = AP → ② PE = $\frac{1}{2}$ AP

③ $\frac{2}{3}$ of AE = AP → ④ PE = $\frac{1}{3}$ AE

(Don't worry)

1	2
AP : PE	PE : AP
2 : 1	1 : 2
3	4
AE : AP	PE : AE
3 : 2	1 : 3

I hope it's not 11:42 PM

Altitude

- "Nice altitude!!ö"

a segment joining a vertex to the opposite side so that it is perpendicular to that side.

NOT:

- a midpoint (no equal segments!)
- needing to be in the triangle

•could be in, out, or to the side of the triangle.

:D you got this!

Thanks for viewing my notes! Good luck in geometry!

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