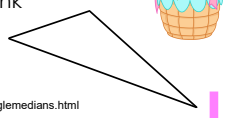
Warm Discuss.

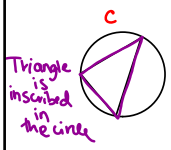
1) Where do you think the "center" of a triangle would be?

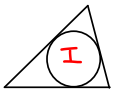


http://www.mathopenref.com/trianglemedians.html

https://www.youtube.com/watch?v=Mz0dGQ5h82w

2) Which is the inscribed circle and which is the circumscribed circle?



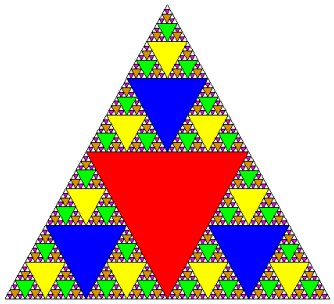




3) What does "concur" mean?
agree; come together; coincide; occur simultaneously

Dec 14-9:33 AM

# Points of Concurrency

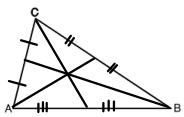
. . .the 4 Centers of Triangles

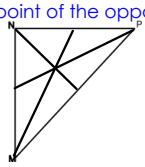


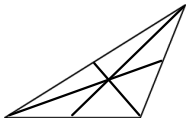
Jan 28-9:26 AM

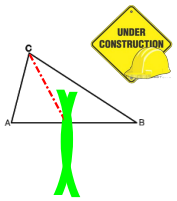
## Centroid *"medians"*

a median is a segment that joins a vertex to the midpoint of the opposite side







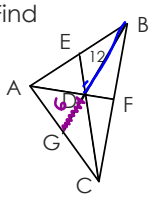



1. point of balance
2. small segment is 1/2 of large segment and 1/3 entire segment; vertex to centroid is 2/3 the entire segment.

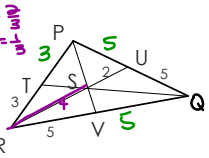
Jan 27-11:31 AM

Ex 1: In △ABC, D is the centroid and BD=12. Find DG and BG.

$\frac{6}{18} = \frac{1}{3}$ $\frac{12}{18} = \frac{2}{3}$



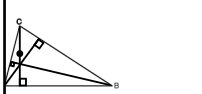

2) In △PQR, S is the centroid, UQ=5, TR=3, RV=5, and SU=2.
a. find RU and RS
b. find the perimeter of △PQR.

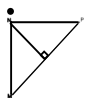


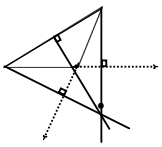

Dec 14-9:27 AM

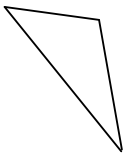
## Orthocenter *"altitudes"*

**an altitude is a segment from a vertex that is perpendicular to the opposite side.**







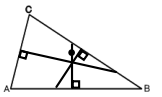



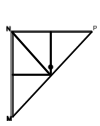
can be inside (acute), on (right), or outside (obtuse) the triangle.

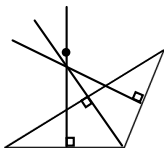
Jan 27-11:35 AM

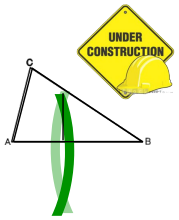
## Circumcenter *"perpendicular bisectors"*

a segment that is perpendicular to a side of a triangle at the midpoint

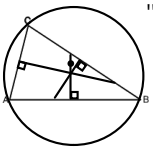






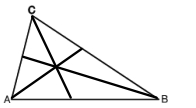


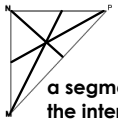

1) circumcenter is equidistant from vertices
"radii of circle that circumscribes △"



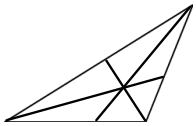
Jan 27-11:35 AM

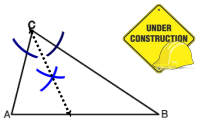
## Incenter "*angle bisectors*"





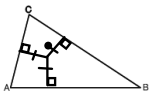
**a segment that divides the interior angle of a triangle into 2 congruen angles**

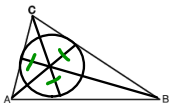







incenter is equidistant from sides.





Mar 13-12:22 PM

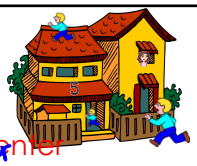
## How in the world will we keep up with all of these facts?

https://www.youtube.com/watch?v=Mz0dGQ5h82w

## ...and how will we ever remember them?

Jan 27-11:45 AM

## meet Ma 'n Pa Cinco



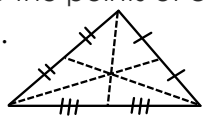
M edians — Centroid
An gle Bisectors — In Center
P erpendicular Bisectors — Circumcenter
A ltitudes — Orthocenter

MA stays in the house...Pa can be in the house, on the house, or outside the house.

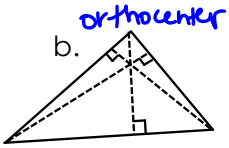
Nov 20-9:22 AM

## Name the points of concurrency.

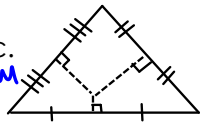
a. Centroid



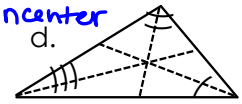
b. orthocenter



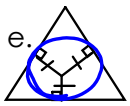
c. circum



d. Incenter



e.

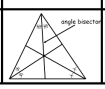


Incenter

f.

Circumcenter

Jan 27-12:17 PM

| | Perpendicular Bisector | Angle Bisector | Median | Altitude |
|---|---|---|---|---|
| Definition | Segment that is perpendicular to a side of the triangle at the midpoint | Segment that divides an interior angle of the triangle into two congruent angles | Segment that joins a vertex to the midpoint of the opposite side | Segment from a vertex that is perpendicular to the opposite side (or an extension of it) |
| Point of Concurrency | Circumcenter | Incenter | Centroid | Orthocenter |
| Location: Acute Δ | Inside | Inside | Inside | Inside |
| Right Δ | Hypotenuse | Inside | Inside | Right angle vertex |
| Obtuse Δ | Outside | Inside | Inside | Outside |
| Vertex as Endpoint? | Sometimes | Always | Always | Always |
| Special Properties | Circumcenter is equidistant from vertices and is the center of a circumscribed circle | Incenter is equidistant from the sides of triangle and is center of inscribed circle | Centroid is 2/3 of distance from vertex to opposite side. Centroid is center of gravity | |
| Illustration |  |  |  |  |

Mar 28-10:16 AM

## Homework~


I can apply properties of the points of concurrency in a triangle.

Jan 31-1:20 PM