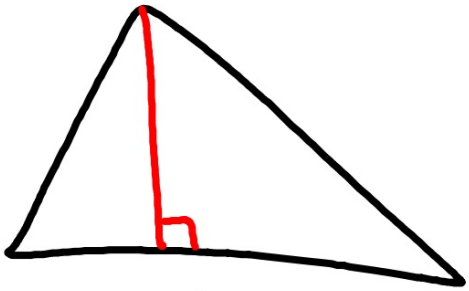
Geometry 5.2

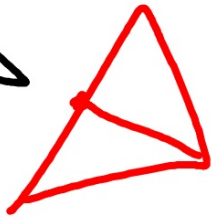
Construct median of a triangle
Identify and use triangle medians
Identify and use triangle altitudes

perpendicular bisector
angle bisector
median mp to opp vertex
altitude
centroid P.O.C. medians
orthocenter P.O.C. altitudes

activity: little book
constructions
cardboard centroids



$A = \frac{1}{2}bh$



5.1
Point of concurrency (POC)

POC:
Angle bisectors (incenter)
Center of inscribed circle
Equidistant from sides (perp)

Perp bisectors (circumcenter)
Center of circumscribed circle
Equidistant from vertices

Triangle Book and your name

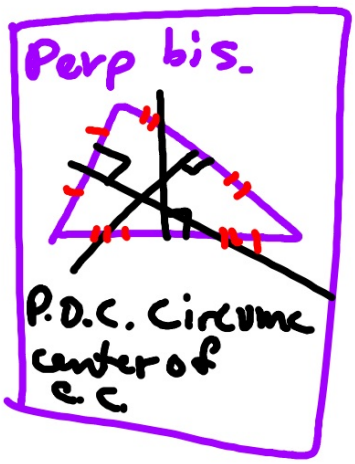
(inside pages)

1 ·perpendicular bisector

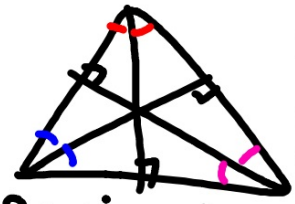
2 ·angle bisector

3 ·median

4 ·altitude

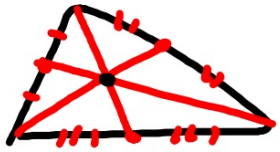


Angle bis



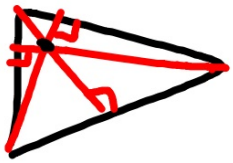
P.O.C. incenter
can of inscr. ○
pt

Median



P.O.C. centroid
x 2x
bal. pt

Alt.



P.O.C. orthocenter
||
vertex ⊥ to
side

...

p. 334

Construction 1 Median of a Triangle

Step 1

Place the thumbtack on vertex D and then on vertex E to draw intersecting arcs above and below $\overline{DE}$. Label the points of intersection R and S.

Step 2

Use a straightedge to find the point where $\overline{RS}$ intersects $\overline{DE}$. Label the point M. This is the midpoint of $\overline{DE}$.

Step 3

Draw a line through F and M. $\overline{FM}$ is a median of $\triangle DEF$.

Centroid

Triangle DEF

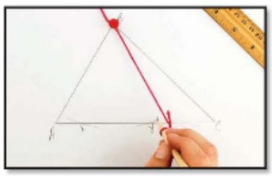
Find the midpoint of a side
Connect by folding: midpoint and opposite angle.

centroid

Altitude

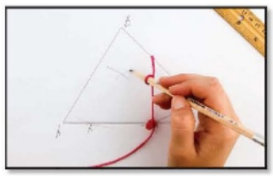
Construction 2 Altitude of a Triangle

Step 1



Place the thumbtack on vertex B and draw two arcs intersecting $\overline{AC}$. Label the points where the arcs intersect the sides as X and Y.

Step 2



Adjust the length of the string so that it is greater than $\frac{1}{2}XY$. Place the tack on X and draw an arc above $\overline{AC}$. Use the same length of string to draw an arc from Y. Label the points of intersection of the arcs H.

Step 3

Use a straightedge to draw $\overleftrightarrow{BH}$. Label the point where $\overleftrightarrow{BH}$ intersects $\overline{AC}$ as D. $\overline{BD}$ is an altitude of $\triangle ABC$ and is perpendicular to $\overline{AC}$.

Triangle ABC

orthocenter

Fold a side (through a vertex) so that segments line up.

Triangle centroid activity

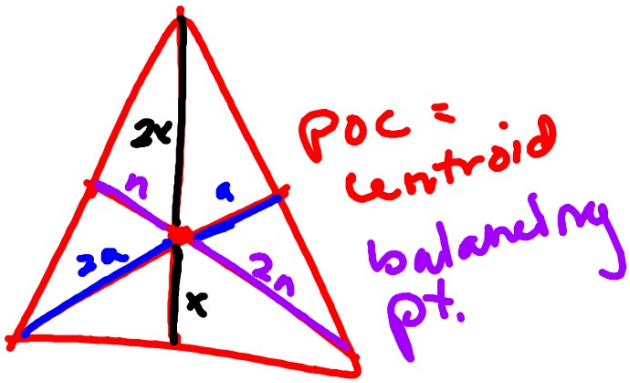
Use a ruler and protractor (if necessary) to draw a triangle on a piece of cardboard.

The triangle should be acute. Make it as large as possible.

(Each side of the triangle should be between 4 and 6 inches in length.)

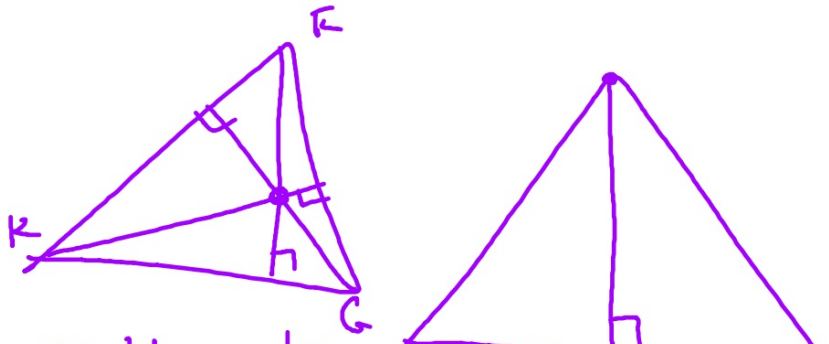
Cut out the triangle

Measure and mark the midpoint of each side. Be as precise as possible.(mm)



Draw the median from each angle.
The point of concurrency is the centroid.

POC
Medians (Centroid)
Balancing point
Divides into x, 2x



orthocenter

P.O.C. 3 altitudes