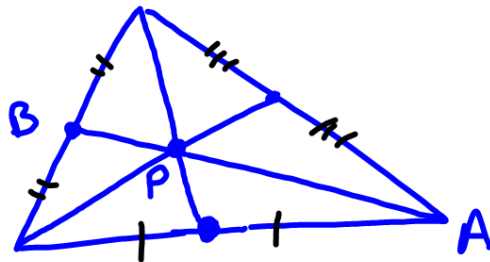


5.4 Medians & Altitudes



P is the concurrency
of the medians.
A.k.a. the Centroid

\overline{AB} is called the median.

(B is midpoint & it connects with the vertex A)

$$AP = 2BP \quad \text{or} \quad \frac{1}{2} AP = BP$$

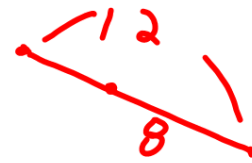
$AP = \frac{2}{3} AB$... P is $\frac{2}{3}$ the distance
of AB

If $AB = 12$, $AP = ?$. $BP = ?$

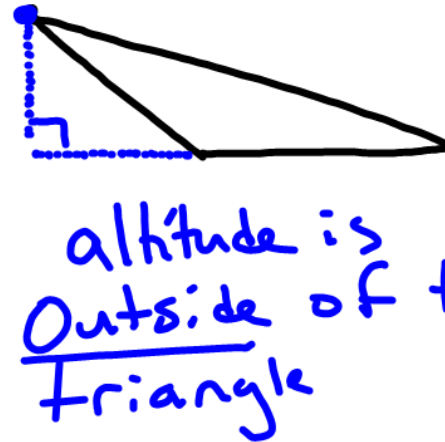
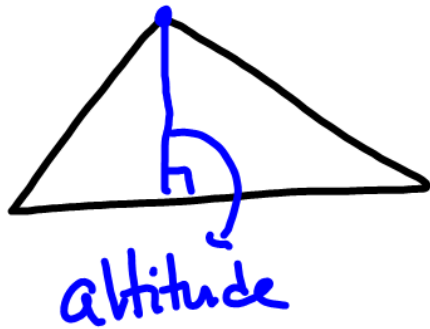
$$\frac{2}{3} \cdot \frac{12}{1} = \frac{24}{3}$$

$$AP = \frac{2}{3}(12) = 8$$

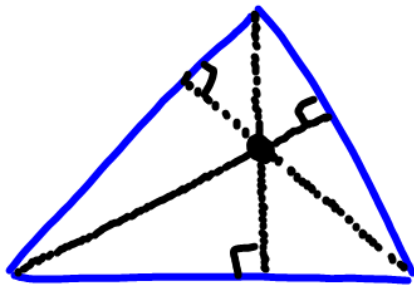
$$12 - 8 = 4$$



Altitude - A.k.A. height. From vertex to the opposite side & forms a right angle (perpendicular)



Altitude Concurrency

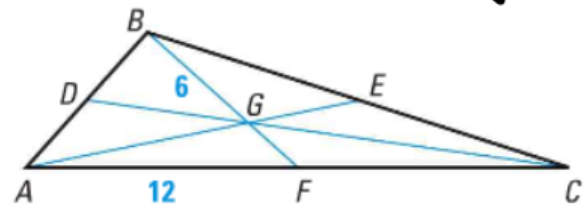


They all meet at a point called the orthocenter

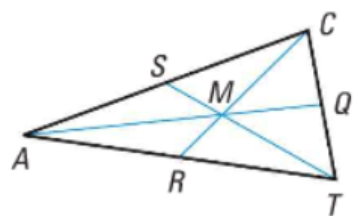
5.4 Medians & Altitudes

Homework

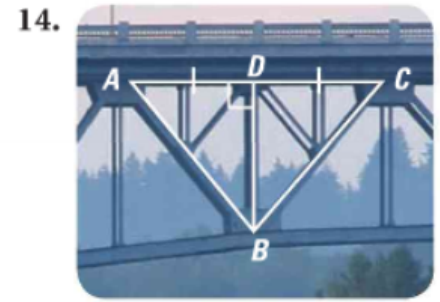
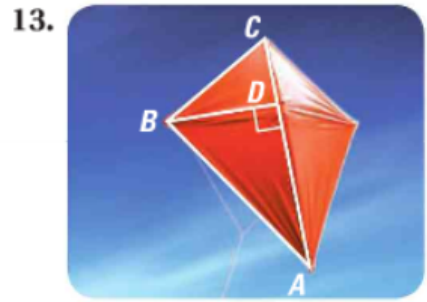
FINDING LENGTHS G is the centroid of $\triangle ABC$, $BG = 6$, $AF = 12$, and $AE = 15$. Find the length of the segment.



- 3. \overline{FC}
- 4. \overline{BF}
- 5. \overline{AG}
- 6. \overline{GE}
- 7. **★ MULTIPLE CHOICE** In the diagram, M is the centroid of $\triangle ACT$, $CM = 36$, $MQ = 30$, and $TS = 56$. What is AM ?
 - (A) 15
 - (B) 30
 - (C) 36
 - (D) 60



IDENTIFYING SEGMENTS Is \overline{BD} a perpendicular bisector of $\triangle ABC$? Is \overline{BD} a median? an altitude?



REASONING Use the diagram shown and the given information to decide whether \overline{YW} is a perpendicular bisector, an angle bisector, a median, or an altitude of $\triangle XYZ$. There may be more than one right answer.

- 17. $\overline{YW} \perp \overline{XZ}$
- 18. $\angle XYW \cong \angle ZYW$
- 19. $\overline{XW} \cong \overline{ZW}$
- 20. $\overline{YW} \perp \overline{XZ}$ and $\overline{XW} \cong \overline{ZW}$
- 22. $\overline{YW} \perp \overline{XZ}$ and $\overline{XY} \cong \overline{ZY}$

