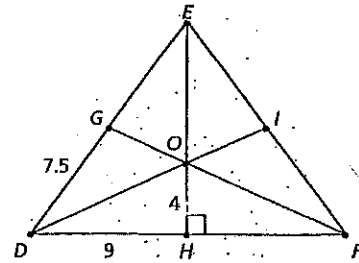


#1-3, Given $\triangle FIR$ with $F(-5, 8)$, $I(1, 4)$ and $R(3, -2)$, find each:

- The 2 points the median of \overline{FR} will intersect.
 - The slope of \overline{FI} 's perpendicular bisector.
 - The equation of the line for the altitude to side \overline{RI} .
4. Birdy McFly is designing a large triangular glider. She needs to attach her harness at the center of gravity for the glider. What point does she need to find?
5. Stained glass artist Susy Sunshine wishes to inscribe a circle in a triangular portion of her latest abstract design. What point does she need to find?

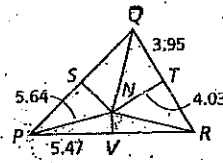
#6-11, use the figure at right and the given information to answer. Point O is the centroid.

- $EO =$
- $GF =$
- $GE =$
- The ratio of OI to $OD =$
- The ratio of OI to $ID =$
- Given $DE=EF$, find the perimeter of $\triangle DEF$

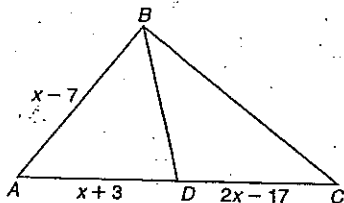


#12-15, \overline{SN} , \overline{TN} and \overline{VN} are the perpendicular bisectors of $\triangle PQR$. Find each length.

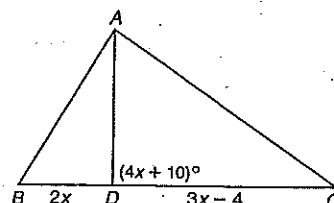
- NR
- RV
- TR
- QN



16. Find AB if \overline{BD} is a median of $\triangle ABC$.



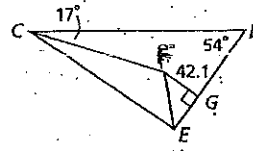
17. Find BC if \overline{AD} is an altitude of $\triangle ABC$.



#18-19, \overline{CF} and \overline{EF} are angle bisectors of $\triangle CDE$
Find each length.

18. The distance from F to \overline{CD}

19. $m\angle FED$



#20-23, Decide whether each statement is always, sometimes or never true. (1 pt ea)

20. A median bisects an angle.

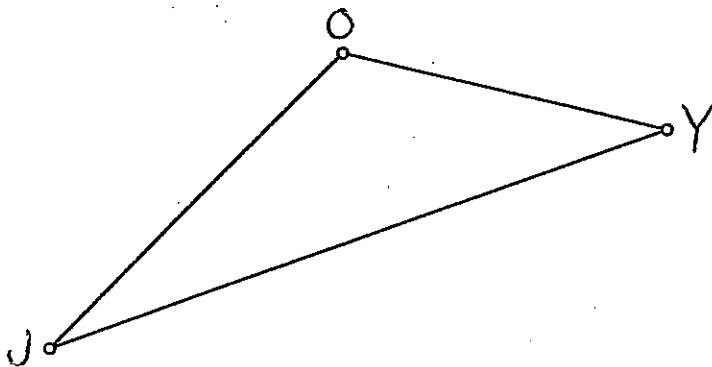
21. A centroid will lie outside the triangle.

22. An altitude will be perpendicular to one side of triangle.

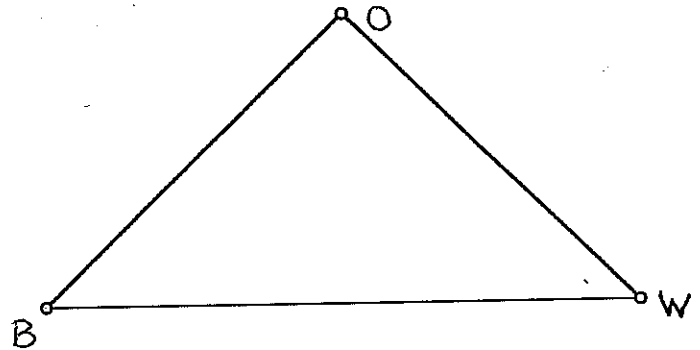
23. The incenter of a right triangle will lie on one of the sides of the triangle.

#24-25 Construct each.

24. The centroid of $\triangle JOY$



25. A circle inscribed in $\triangle BOW$



Extra Credit: \overline{EX} is a median in $\triangle ELF$ with points $E(3,8)$, $X(12,3)$ and $F(9,12)$.

a. What are the coordinates of L ?

b. Is \overline{EX} an altitude in $\triangle ELF$? Explain why or why not.