

IM 3 HW: 3.4 Points of Concurrency and Triangles

Point of Concurrency Worksheet

Give the name the point of concurrency for each of the following.

1. Angle Bisectors of a Triangle _____
2. Medians of a Triangle _____
3. Altitudes of a Triangle _____
4. Perpendicular Bisectors of a Triangle _____

Complete each of the following statements.

5. The **incenter** of a triangle is equidistant from the _____ of the triangle.
6. The **circumcenter** of a triangle is equidistant from the _____ of the triangle.
7. The **centroid** is _____ of the distance from each vertex to the midpoint of the opposite side.

10. Complete the following chart. Write if the point of concurrency is inside, outside, or on the triangle.

	Acute Δ	Obtuse Δ	Right Δ
Circumcenter			
Incenter			
Centroid			
Orthocenter			

In the diagram, the perpendicular bisectors (shown with dashed segments) of ΔABC meet at point G --the circumcenter. and are shown dashed. Find the indicated measure.

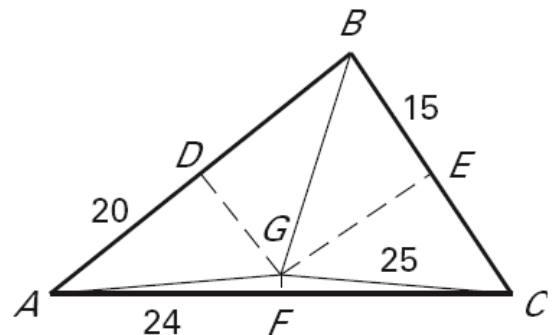
11. $AG =$ _____ 12. $BD =$ _____

13. $CF =$ _____ 14. $AB =$ _____

15. $CE =$ _____ 16. $AC =$ _____

17. $m\angle ADG =$ _____

18. If $BG = (2x - 15)$, find x .

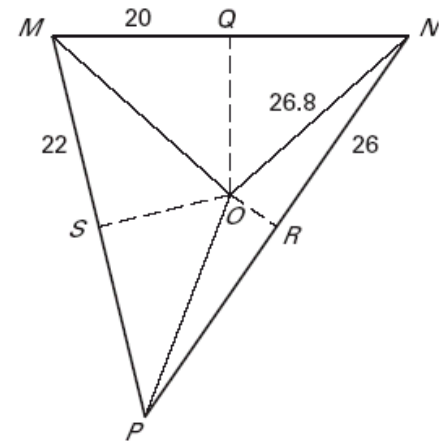


$x =$ _____

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In the diagram, the perpendicular bisectors (shown with dashed segments) of $\triangle MNP$ meet at point O —the *circumcenter*. Find the indicated measure.

19. $MO =$ _____ 20. $PR =$ _____
21. $MN =$ _____ 22. $SP =$ _____
23. $m\angle MQO =$ _____
24. If $OP = 2x$, find x .



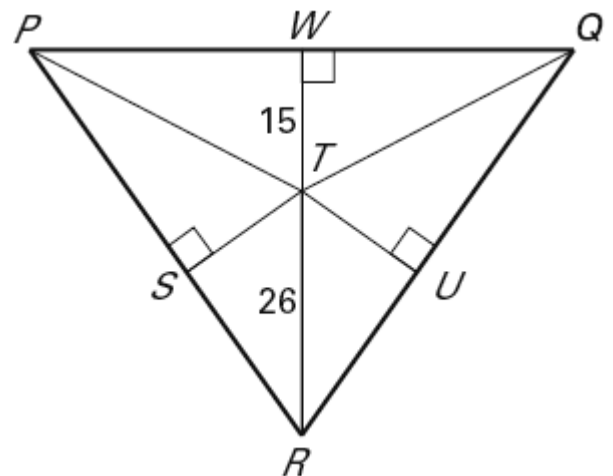
$x =$ _____

Point T is the *incenter* of $\triangle PQR$.

25. If Point T is the ***incenter***, then Point T is the point of concurrency of the _____.
26. $ST =$ _____
27. If $TU = (2x - 1)$, find x

$x =$ _____

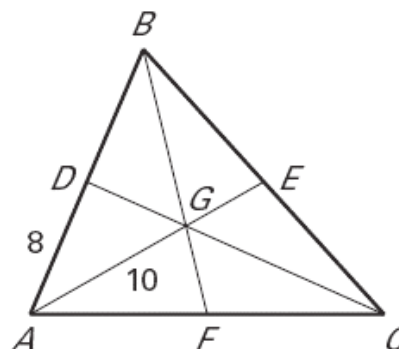
28. If $m\angle PRT = 24^\circ$, then $m\angle QRT =$ _____
29. If $m\angle RPQ = 62^\circ$, then $m\angle RPT =$ _____



Point G is the centroid of $\triangle ABC$, $AD = 8$, $AG = 10$, $BE = 10$, $AC = 16$ and $CD = 18$. Find the length of each segment.

30. If Point G is the **centroid**, then Point T is the point of concurrency of

the _____.



31. $DB =$ _____ 32. $EA =$ _____

33. $CG =$ _____ 34. $BA =$ _____

35. $GE =$ _____ 36. $GD =$ _____

37. $BC =$ _____ 38. $AF =$ _____

Point S is the centroid of $\triangle RTW$, $RS = 4$, $VW = 6$, and $TV = 9$. Find the length of each segment.

39. $RV =$ _____

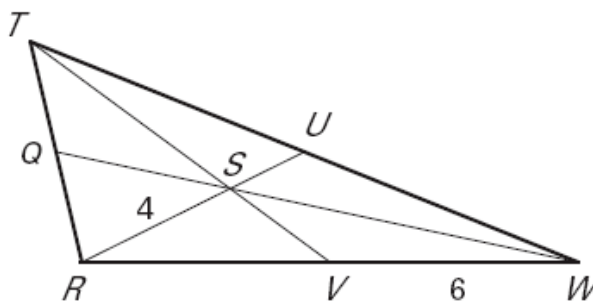
40. $SU =$ _____

41. $RU =$ _____

42. $RW =$ _____

43. $TS =$ _____

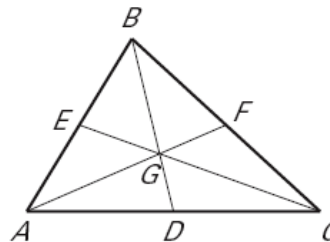
44. $SV =$ _____



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Point G is the centroid of $\triangle ABC$. Use the given information to find the value of the variable.

45. $FG = x + 8$ and $GA = 6x - 4$



$x =$ _____

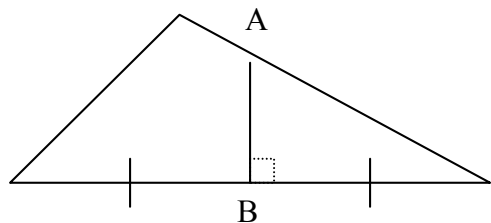
46. If $CG = 3y + 7$ and $CE = 6y$

$y =$ _____

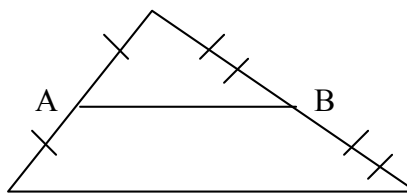
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Is segment AB a midsegment, perpendicular bisector, angle bisector, median, altitude, or none of these?

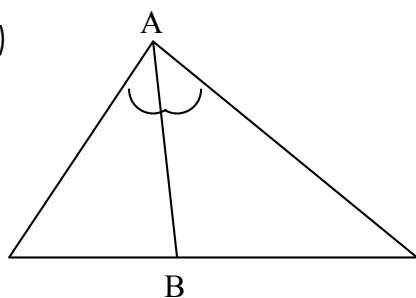
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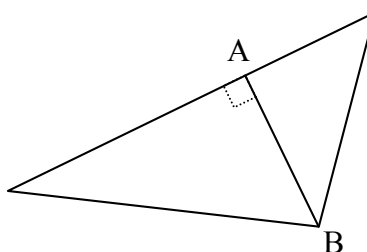
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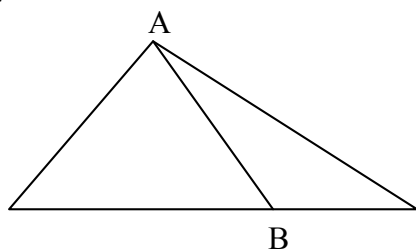
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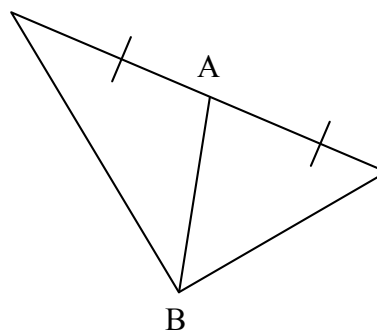
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