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Chapter 5 - Review

For #1-4, using a ruler, draw an acute scalene triangle (one for each question) and label as specified in the question.

1. \overline{RU} is a median of $\triangle RST$. Draw $\triangle RST$ containing median \overline{RU} . Accurately label all congruent segments and angles.

2. \overline{MN} is an altitude of $\triangle KLM$. Draw $\triangle KLM$ containing altitude \overline{MN} . Accurately label all congruent segments and angles.

3. \overline{AD} is an angle bisector of $\triangle ABC$. Draw $\triangle ABC$ containing angle bisector \overline{AD} . Accurately label all congruent segments and angles.

4. \overline{UV} is a perpendicular bisector of \overline{WX} in $\triangle WXY$. Draw $\triangle WXY$ containing perpendicular bisector \overline{UV} . Accurately label all congruent segments and angles.

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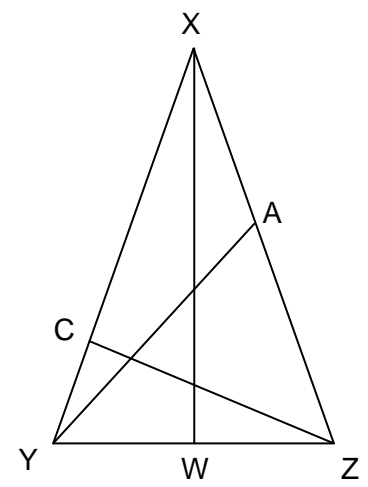
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5. \overline{XW} is an angle bisector. $\angle YXZ = 7x + 39$, $\angle WXY = 10x - 13$ and $\angle XZY = 10x$. Label the diagram.

a) Solve for x . Show all work.

b) Find the measure of $\angle ZWX$. Show all work.



c) Is \overline{XW} and altitude? Justify your answer.

For #6-10. Determine the relationship between the measures of the given angle. Justify your answer.

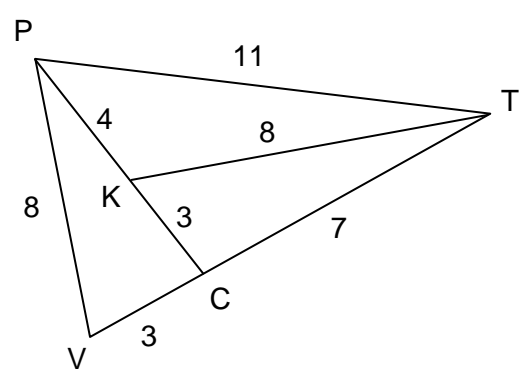
6. $\angle VPT$ and $\angle TVP$

7. $\angle CPT$ and $\angle PTC$

8. $\angle VPT$ and $\angle PTV$

9. $\angle KCT$ and $\angle TKC$

10. $\angle PVC$ and $\angle PCV$

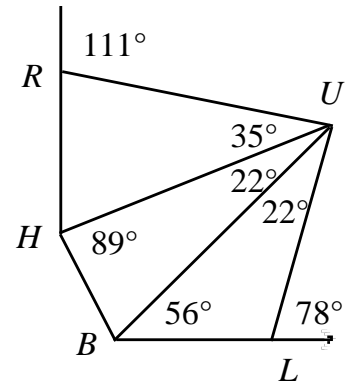


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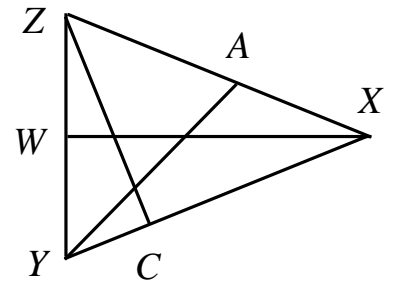
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11. Determine the relationship between the length of \overline{HU} and \overline{RU} . Justify your answer.



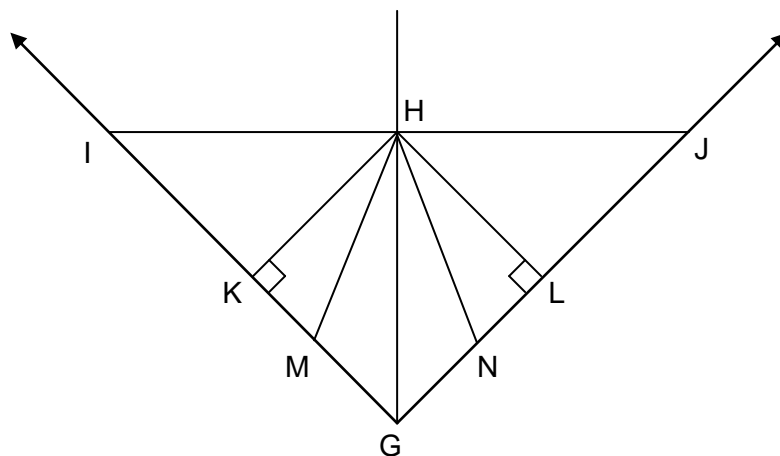
12. \overline{ZC} is an altitude, $\angle CYW = 9x + 38$, and $\angle WZC = 17x$.

a) Solve for x . Show all work.



b) Find the measure of $\angle CZY$. Show all work.

13. Which segments need to be congruent if point H is on the angle bisector of $\angle G$?



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For #14-21, complete each sentence using words from the list

14. The **Point of Concurrency** of the **Perpendicular Bisectors** in a triangle is called the _____.

15. The **Incenter** is the center of a(n) _____.

16. The **Point of Concurrency** of the **Altitudes** in a triangle is called the _____.

17. The **Circumcenter** is equidistant from the _____.

18. The **Point of Concurrency** of the **Angle Bisectors** in a triangle is called the _____.

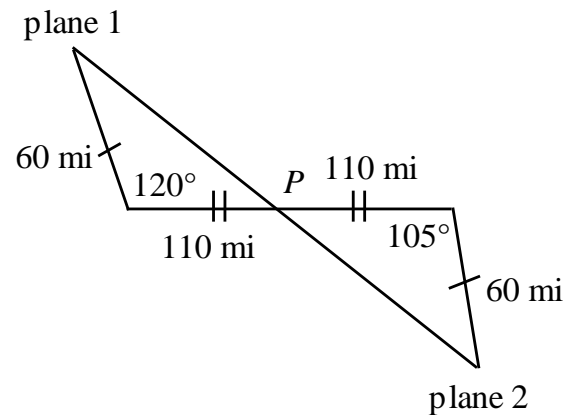
19. The **Circumcenter** is the center of a(n) _____.

20. The **Point of Concurrency** of the **Medians** in a triangle is called the _____.

21. The **Incenter** is equidistant from the _____.

- | |
|----------------------|
| Vertices |
| Sides |
| Incenter |
| Inscribed Circle |
| Centroid |
| Circumcenter |
| Circumscribed Circle |
| Orthocenter |

22. The figure below shows the position of two planes after traveling 170 miles in different directions from the airport marked by point P. Which plane is farther from the airport? Explain your reasoning.



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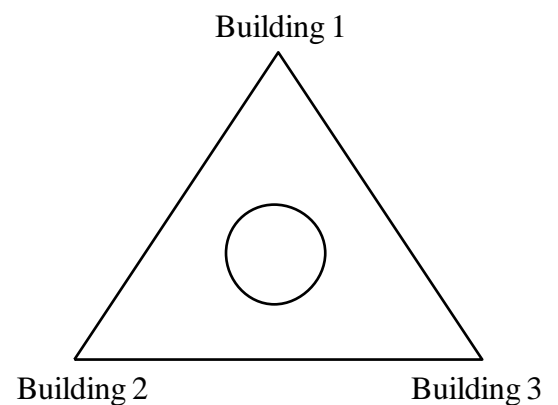
23. A circular swimming pool needs to be designed for a triangular lawn surrounded by apartment buildings at the three corners, as shown in the figure below. The swimming pool should be located such that the center of the pool is equidistant from the buildings at the corners.

a) What **Special Segment** would you use to find the position of the swimming pool? Why?

b) What **Point of Concurrency** is formed by these special segments?

c) Accurately label the diagram showing the location of the special segments. Mark all congruent angles and/or segments formed by the special segments.

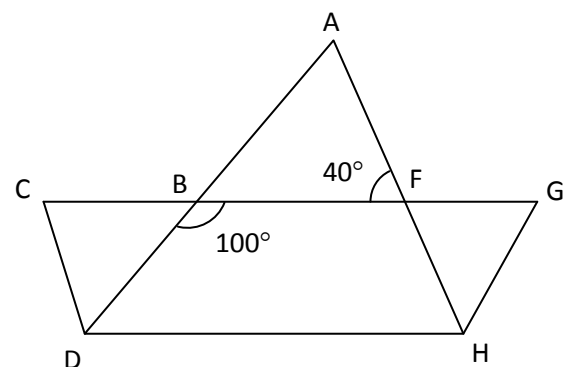
d) Label the point of concurrency.



24. In the figure shown, the length of BF is $3x$ and the length of AF is $2y + 5$

a) Write an inequality relating x and y .

b) Solve the inequality for y in terms of x .

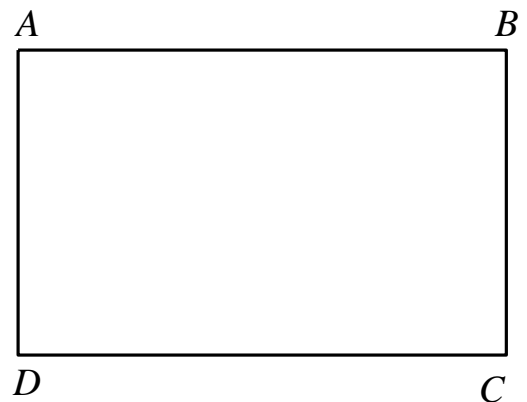


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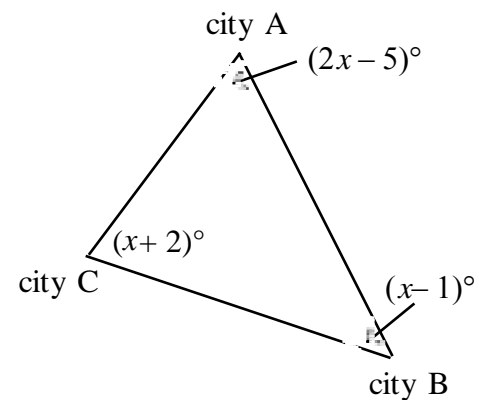
25. Rectangle ABCD represents a wall. The following clues are given about the position of a painting on the wall.

- (1) The painting is equidistant from point A and point B. What special segment can be used to find this location? Draw and label it.
- (2) The painting is equidistant from BC and DC. What special segment can be used to find this location? Draw and label it.

Where is the painting located? Justify your answer.



26. A salesperson travels from city A to city B and then to city C. From city C, the salesperson travels directly back to city A as shown in the diagram below. List the lengths of the legs of the trip in order from least to greatest.



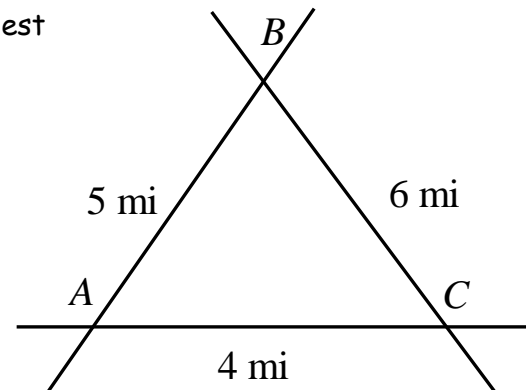
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27. Three roads intersect to form a triangle.

a) List the angles for each intersection from largest to smallest

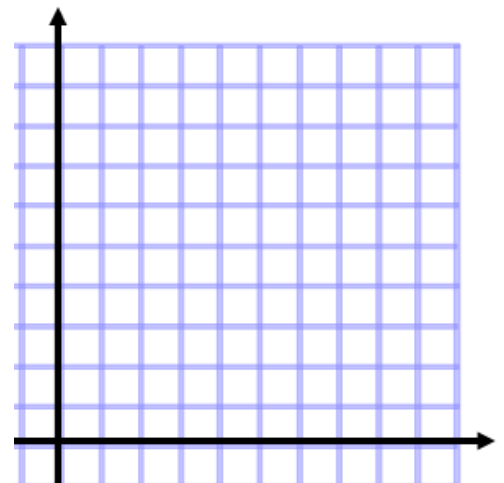


b) Explain why you listed the angles in this order

For #28-30, triangle ABC has vertices $A(2,4)$, $B(6, 2)$, $C(6, 8)$.

28. If \overline{AH} is an altitude of $\triangle ABC$, what are the coordinates of point H? Show all work.

29. What is the slope of \overline{AH} ? Show all work.



30. If \overline{AM} is a median of $\triangle ABC$, what are the coordinates of point M? Show all work.

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31. The vertices of $\triangle DEF$ are $D(4,0)$, $E(-4,-2)$, $F(0,6)$. Complete the following steps to find the coordinates of the **Circumcenter**.

a. Draw and label the triangle on the graph (use a ruler)

b. What is the name of the special segment used to find the Circumcenter?

c. Using a ruler, accurately draw the special segments on the triangle

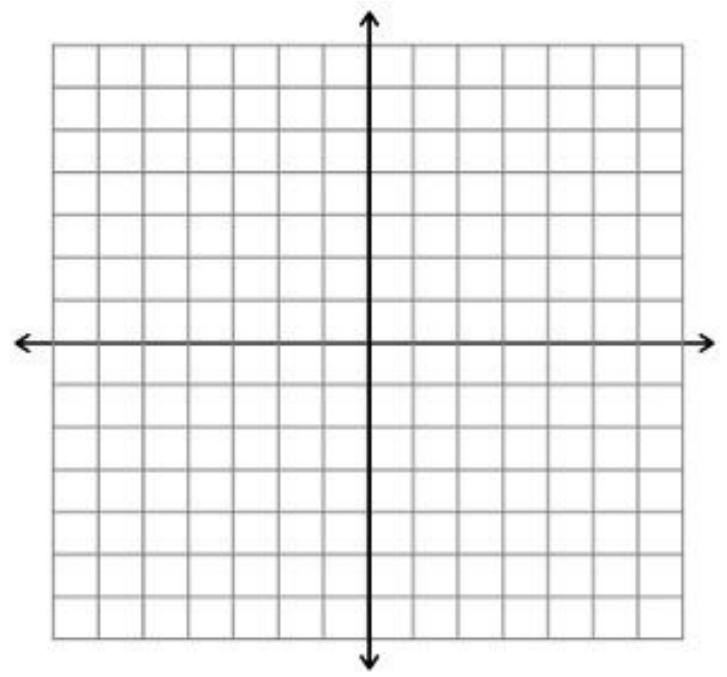
d. Find the equations of all three lines which intersect at the Circumcenter. Show all work.

1)

2)

3)

e. Find the coordinates of the Circumcenter (round to the nearest tenth)



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32. $\triangle LMN$ has the coordinates $L(-4,6)$, $M(2,-2)$, $N(-6,-8)$.

a) Using a ruler graph $\triangle LMN$.

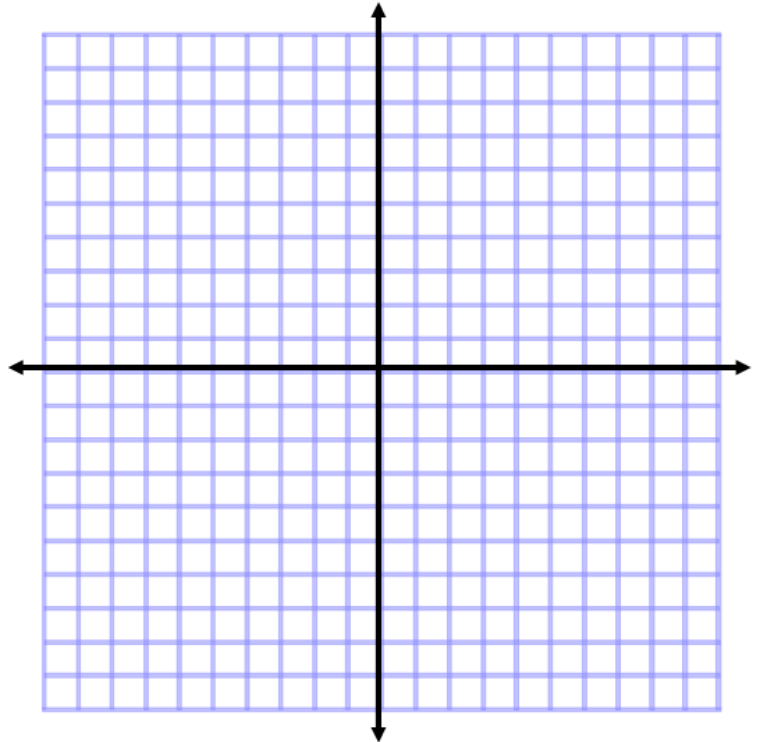
b) \overline{LP} is a median of $\triangle LMN$. What are the coordinates of P ? Show all work.

c) Draw \overline{LP} on the triangle (in a different color)

d) What is the slope of \overline{LP} ? Show all work.

e) Classify $\triangle LMN$ by its sides.
Justify your answer.

f) Classify $\triangle LMN$ by its angles.
Justify your answer.



g) Draw an altitude of $\triangle LMN$ from vertex N (in a different color)

h) Draw a perpendicular bisector through \overline{LN} (in a different color). Label it \overline{RS} .

i) What is the slope of \overline{RS} ? Show all work.