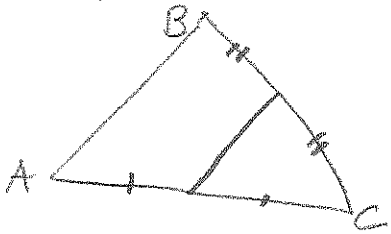
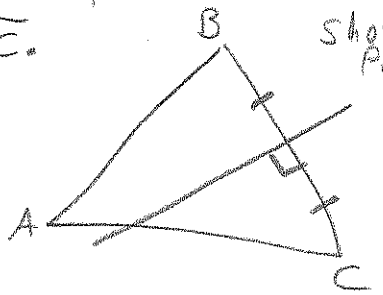
Adv. Geometry Review 5.1-5.4 Key

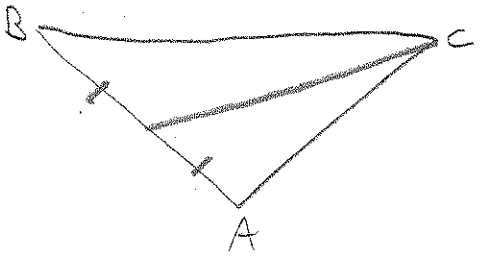
① Draw a segment that will be half the length of $\overline{AB}$. Show the information that guarantees this.



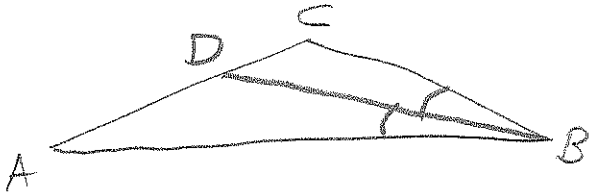
② Sketch the perpendicular bisector to $\overline{BC}$. Show all proper info.



③ Draw the median from vertex C. Show all proper information.



④ Draw angle bisector BD. Label all proper info.



⑤ The three medians of a triangle intersect at the Centroid.
what are the two properties of this point?
- Center of mass - Vertex to centroid is $\frac{2}{3}$ length of median

⑥ The three angle bisectors of a triangle intersect at the incenter.
- Any point on an angle bisector is...? equidistant from sides of angle
- What is special about the point of concurrency of the angle bisectors.
Center of inscribed circle

⑦ The circumcenter is the point of concurrency of the Perpendicular bisectors.

⑧ The altitudes of a triangle intersect at the Orthocenter

⑨ what is true about any point on a perpendicular bisector? equidistant to end points of segment being bisected

⑩ The circumcenter is the center of a circle that... contains the points of the △.

⑪ Can the incenter ever be outside of the triangle?
NO

(12) where is the circumcenter located at for the following types of triangles...

acute	obtuse	right
inside △	outside △	midpoint of hypotenuse

(13) where is the orthocenter located for the following types of triangles

acute	right	obtuse
inside △	vertex of right ∠	outside △

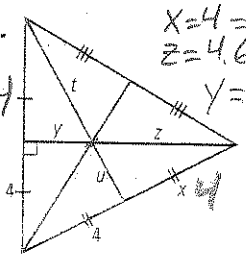
(14) Name the two properties of the midsegment.

- Parallel to third side of △
- $\frac{1}{2}$ the length of third side of △

The diagrams show an assortment of perpendicular bisectors of triangle sides, angle bisectors, and centroids. Find all unknowns. Match them with their letters in the letter-answer bank to spell an adventure.

A	10	**N**	8
B	2	**O**	12
C	14	**P**	11
D	6.5	**R**	7
E	2.5	**S**	4.5
F	9	**T**	5
G	13	**U**	16
H	3	**W**	4
I	6	**Y**	22

1.

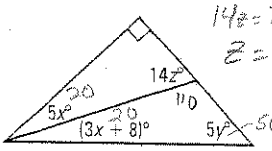


$x = 4 = w$
$z = 4.6 = s$
$y = 2.3$ E

$4^2 + c^2 = 8^2$
$c^2 = 64 - 16$
$c = \sqrt{48} \approx 6.9$

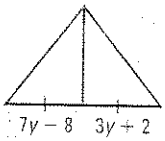
$2.8^2 + 4^2$

2.



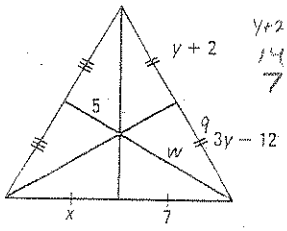
$14z = 70$
$z = 5$
$5x = 3x + 8$
$x = 4$
$y = 10$

3.



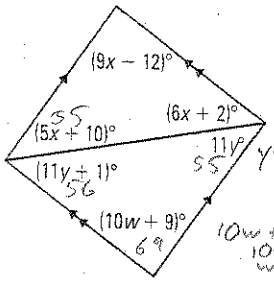
$4y = 10$
$y = 2.5$

4.



$y + 2 = 3y - 12$
$14 = 2y$
$7 = y$

5.

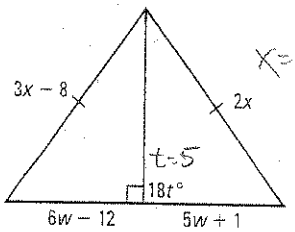


$20x = 180$
$x = 9$

$y = 5$

$10w + 9 = 69$
$10w = 60$
$w = 6$

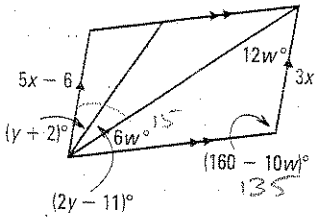
6.



$x = 8$

$6w - 12 = 5w + 1$
$w = 13$

7.

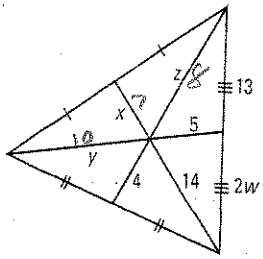


$x = 3$

$8w + 160 = 180$
$8w = 20$
$w = 2.5$

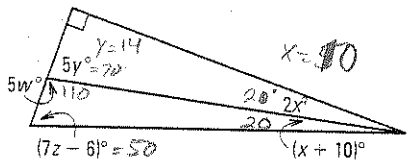
$y + 2 + 2y - 11 = 30$
$3y - 9 = 30$
$3y = 39$
$y = 13$

8.



$w = 6.5$

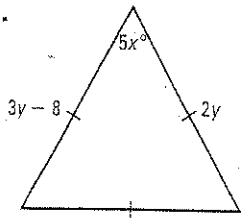
9.



$y = 14$
$x = 10$

$7z = 56$
$z = 8$

10.



$x = 12$
$y = 8$

H I T

W	~~S~~	~~S~~	~~S~~	E	W	A	T	E	R	R	A	F	T	I	N	G
1x	**1y**	**1z**	**1t**	**1u**	**2x**	**2y**	**2z**	**3y**	**4x**	**4y**	**4w**	**5x**	**5y**	**5w**	**6x**	**6w**

T	H	E	G	R	A	N	D	C	A	N	Y	O	N
6t	**7x**	**7w**	**7y**	**8x**	**8y**	**8z**	**8w**	**9y**	**9x**	**9z**	**9w**	**10x**	**10y**

#1 - Question & Answers are Mismatched, you will get WHITE.
#2 - Must Assume angle bisector.
#9 - Must Assume angle bisector.