

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Geometry  
Points of Concurrency Homework

Describe how each of the points of concurrency is found. Be specific!

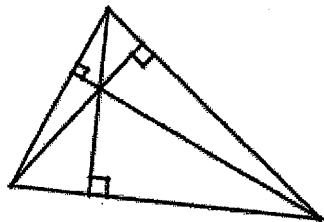
Centroid POC of medians

Incenter POC of Angle Bisector

Circumcenter POC of  $\perp$  bisectors

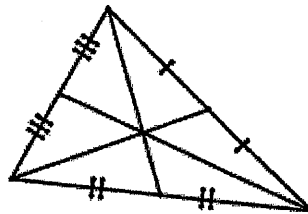
Orthocenter POC of Altitude

Each figure below, tell what point of concurrency is shown and what constructions form that point:



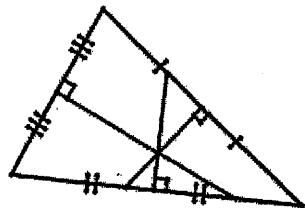
Point: Orthocenter

Formed by: Altitude



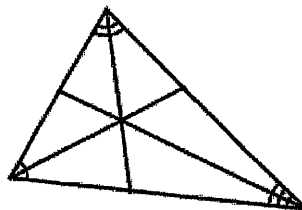
Point: Centroid

Formed by: Median



Point: Circumcenter

Formed by:  $\perp$  bisector

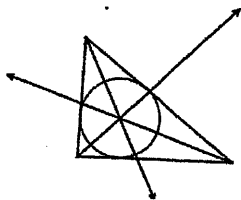


Point: Incenter

Formed by: Angle Bisector

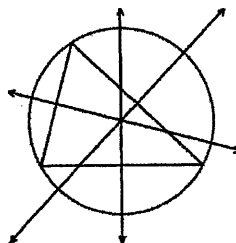
Important Questions (use your graphic organizer to help):

1. Which points of concurrency are always inside the triangle? Incenter, centroid
2. Which point of concurrency is always on the vertex of a right triangle? orthocenter,
3. Which point of concurrency is always on the midpoint of the hypotenuse in a right triangle?  $\perp$  bisector
4. Which points of concurrency are always outside of an obtuse triangle? orthocenter, circumcenter
5. Which point of concurrency is the center of gravity in a triangle? centroid
6. Which point of concurrency is equidistant from every vertex? Circumcenter
7. Which point of concurrency is the center of an inscribed circle as shown below? incenter



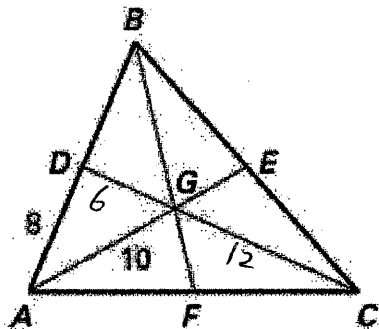
Incenter  
 AB  
 Centroid  
 M  
 Orthocenter  
 A  
 CC circumcenter  
 PP

8. Which point of concurrency is the center of a circumscribed circle as shown below? circumcenter



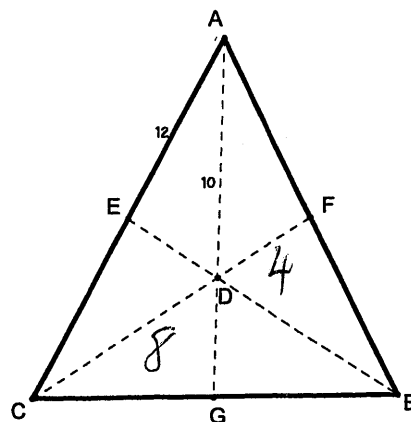
Point G is the Centroid of  $\triangle ABC$ .  $AD = 8$ ,  $AG = 10$ , and  $CD = 18$ . Find the length of the given segment.

9. BD 8
10. AB 16
11. EG 5
12. AE 15
13. CG 12
14. DG 6

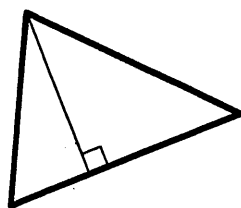


D is the centroid of  $\triangle ABC$ ,  $AE = 12$ ,  $AD = 10$ ,  $CF = 12$ . Find the length of each segment.

15. DG 5
16. AG 15
17. EC 12
18. AC 24
19. DF 4
20. CD 8

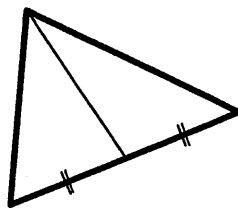


Circle the letter with the name of the segment/line/ray shown.



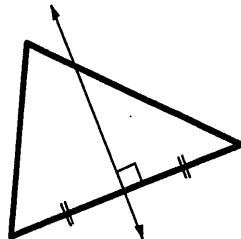
- (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude

2.



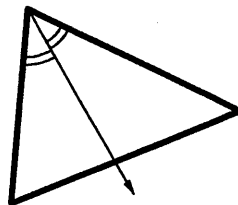
- (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude

3.



- (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude

4.



- (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude

Circle the letter with the name of the correct point of concurrency.

5. The three altitudes of a triangle intersect at the \_\_\_\_\_.

- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

6. The three medians of a triangle intersect at the \_\_\_\_\_.

- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

7. The three perpendicular bisectors of a triangle intersect at the \_\_\_\_\_.

- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

8. The three angle bisectors of a triangle intersect at the \_\_\_\_\_.

- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

9. It is equidistant from the three vertices of the triangle.

- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

10. It is equidistant from the three sides of the triangle.

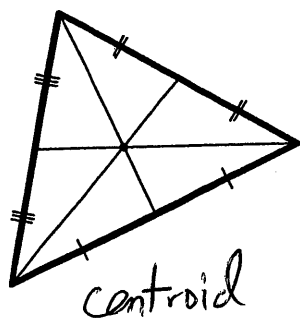
- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

11. It divides each median into two sections at a 2:1 ratio.

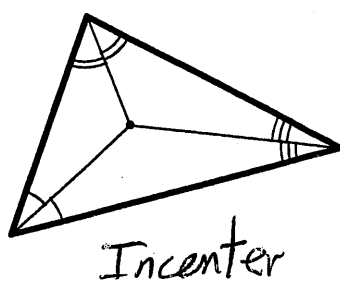
- (a) circumcenter (b) incenter (c) centroid (d) orthocenter

Name the point of concurrency shown.

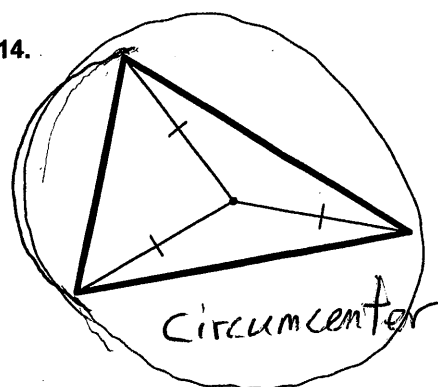
12.



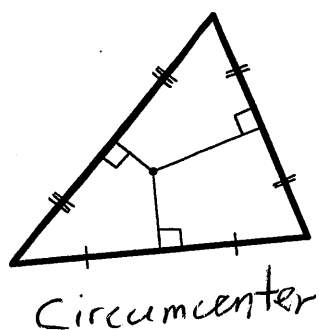
13.



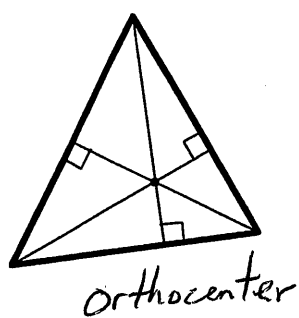
14.



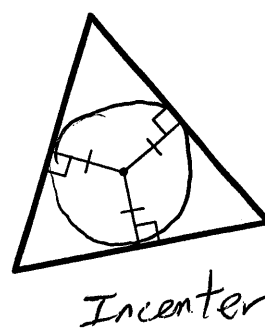
15.



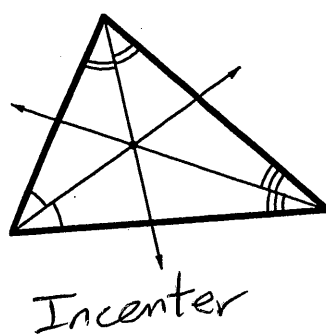
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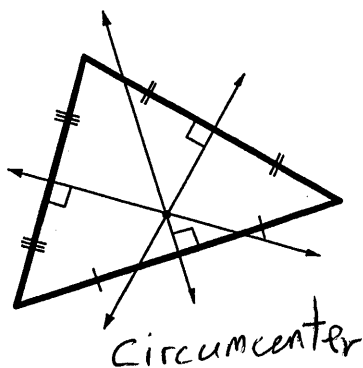
17.



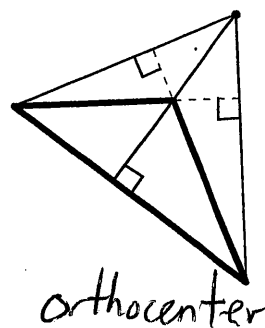
18.



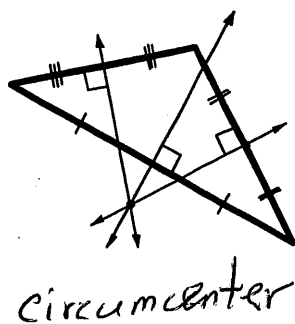
19.



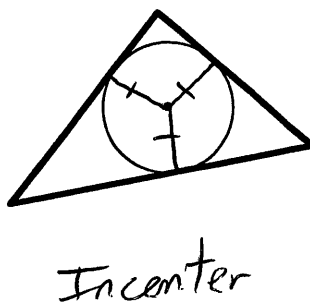
20.



21.



22.



23.

