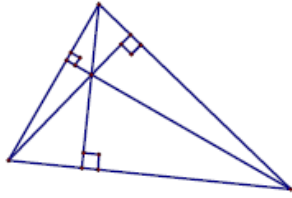


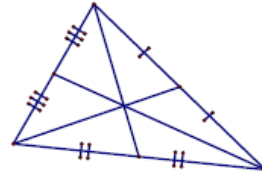
DAY 2 HOMEWORK

In each figure below, tell what point of concurrency is shown (orthocenter, circumcenter, centroid, incenter) and what line segments form that point (median, angle bisectors, perpendicular bisector, altitude).



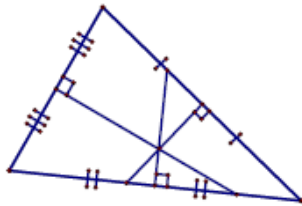
1. Point _____

Formed by these lines _____



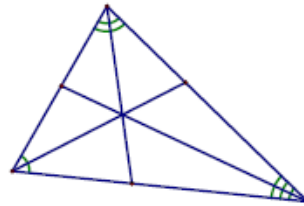
2. Point _____

Formed by these lines _____



3. Point _____

Formed by these lines _____

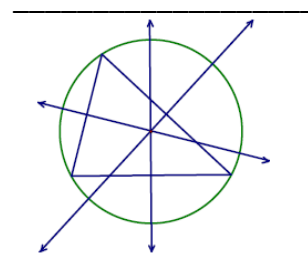
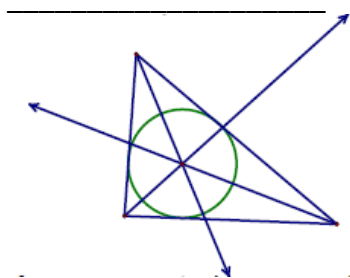


4. Point _____

Formed by these lines _____

Important Questions

5. Which points of concurrency are always inside the triangle? _____
6. Which point of concurrency is always on the vertex of a right triangle? _____
7. Which point of concurrency is always on the midpoint of the hypotenuse in a right triangle? _____
8. Which points of concurrency are always outside of an obtuse triangle? _____
9. Which point of concurrency is the center of gravity in a triangle? _____
10. Which point of concurrency is equidistant from every vertex? _____
11. Which point of concurrency is the center of an inscribed circle as shown below?
12. Which point of concurrency is the center of a circumscribed circle as shown below?



DAY 2 HOMEWORK

13. Point G is the Centroid of Triangle ABC . AD=8, AG=10, CD=18. Find the length of the given segments **(HINT: Look at the special features for this point of concurrency.)**

BD= _____

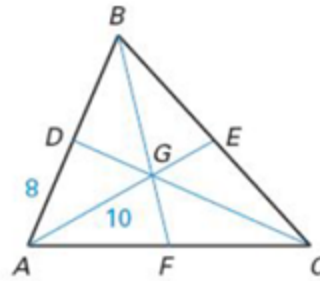
AE= _____

AB= _____

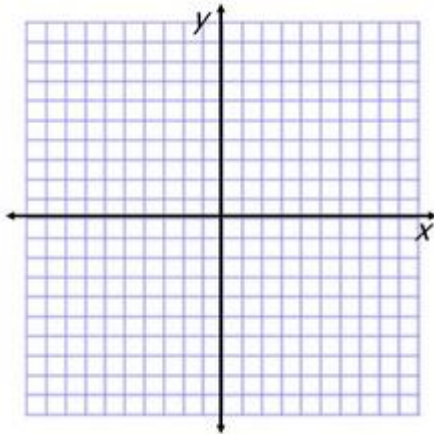
CG= _____

EG= _____

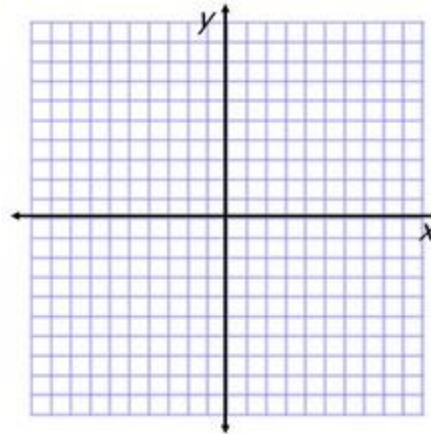
DG= _____



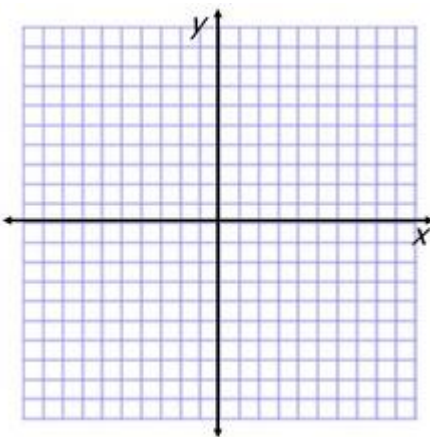
14. $\triangle ABC$: A (0, 0), B (0, -8), and C (4, -8). Justify that (2, -4) is the circumcenter of $\triangle ABC$.



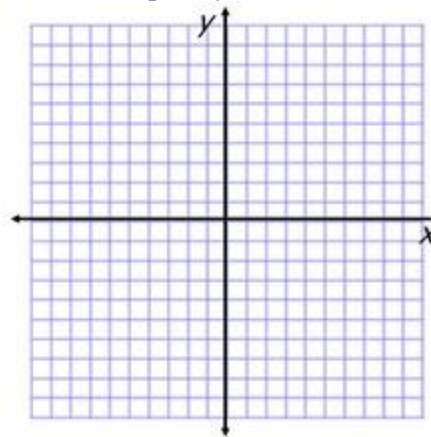
15. $\triangle ABC$: A (6, 9), B (0, 0), and C (-15, 0). Justify that (-3, 3) is the centroid of $\triangle ABC$.



16. $\triangle ABC$: A (-4, 10), B (8, -2), and C (12, 10). Justify that (8, 6) is the orthocenter of $\triangle ABC$.

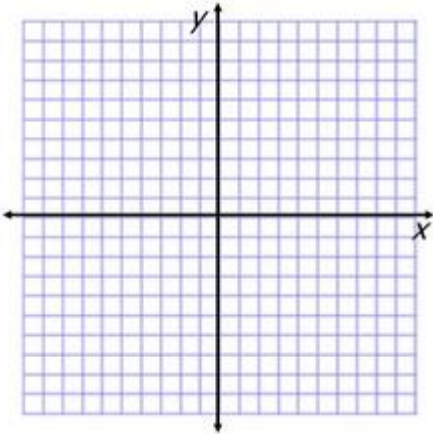


17. $\triangle ABC$ has vertices A (-3, 2), B (4, 7), and C (0, 6). Will the incenter be inside, outside, or on a side of $\triangle ABC$? Explain your answer.

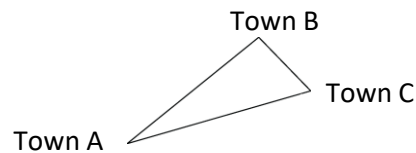


DAY 2 HOMEWORK

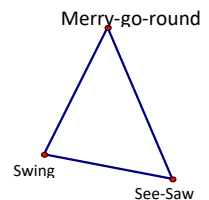
18. $\triangle ABC$ has vertices $A(-4, 6)$, $B(1, 6)$, and $C(4, 9)$. Will the orthocenter be inside, outside, or on a side of $\triangle ABC$? Explain your answer.



19. A fire station is to be built to assist three towns. The relative locations of the towns and the concurrent roads connecting the towns are shown below. If the fire station cannot be built outside the area of the triangle, which point(s) of concurrency cannot be used to determine the location of the fire station?

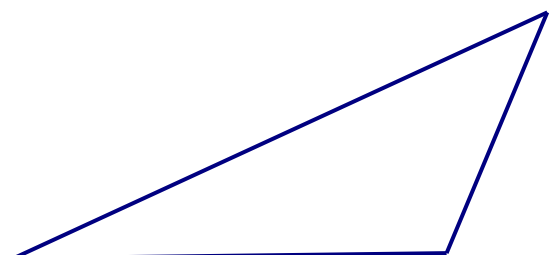


20. A circular pond is to be constructed in a triangular park. Which center of the park should be determined to create the largest possible pond? Explain your answer.



21. The park's recreation director is determining the location of a new water fountain to be equidistant from the swings, basketball court, and gazebo. Which center of the triangle created between each location should be determined? Explain your answer.

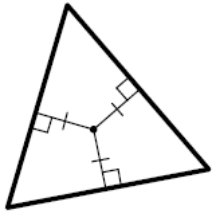
22. You are a sculptor and have just completed a large metal mobile. You want to hang this mobile, made of a flat triangular metal plate, in the State Capitol. This triangular piece will hang so that it will be suspended with the triangular surface parallel to the ground. How would you locate the point where the mobile will balance?



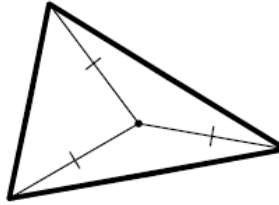
DAY 2 HOMEWORK

Name the point of concurrency shown in each triangle, for #23 and 24.

23.



24.



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

_____ 25. The three altitudes of a triangle intersect at the _____.

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

_____ 26. The three medians of a triangle intersect at the _____.

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

_____ 27. The three perpendicular bisectors of a triangle intersect at the _____.

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

_____ 28. The three angle bisectors of a triangle intersect at the _____.

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

_____ 29. It is equidistant from the three vertices of the triangle.

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

_____ 30. It is equidistant from the three sides of the triangle.

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

_____ 31. It divides each median into two sections at a 2:1 ratio.

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