

Assignment

Write

Describe the similarities and differences between each pair of terms.

1. concurrent and point of concurrency
2. incenter and orthocenter
3. centroid and circumcenter
4. altitude and median

Remember

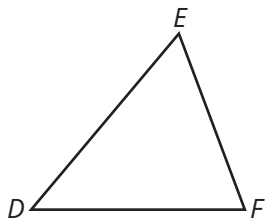
For every triangle:

- The circumcenter is the point of concurrency of the perpendicular bisectors of each side.
- The incenter is the point of concurrency of the angle bisectors.
- The centroid is the point of concurrency of the medians.
- The orthocenter is the point of concurrency of the altitudes.

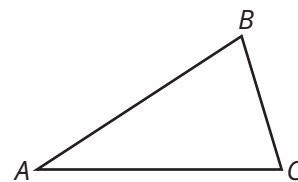
Practice

1. Use a compass and straightedge to perform each construction.

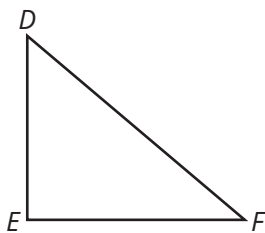
- a. Construct the incenter of $\triangle DEF$.



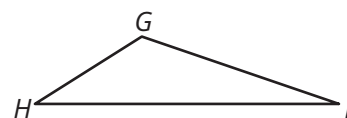
- b. Construct the circumcenter of $\triangle ABC$.



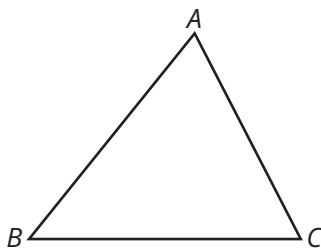
- c. Construct the circumcenter of $\triangle DEF$.



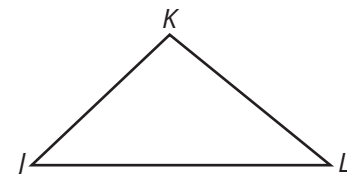
- d. Construct the circumcenter of $\triangle GHI$.



- e. Construct the centroid of $\triangle ABC$.



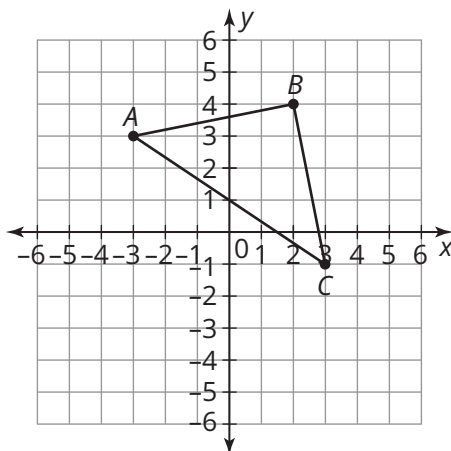
- f. Construct the orthocenter of $\triangle JKL$.



2. Write the term that best completes each statement.
 - a. The incenter of a triangle is the point of concurrency of the _____ of a triangle.
 - b. The circumcenter of a triangle is the point of concurrency of the _____ of a triangle.
 - c. The centroid of a triangle is the point of concurrency of the _____ of a triangle.
 - d. The orthocenter of a triangle is the point of concurrency of the _____ of a triangle.

Stretch

1. The Euler Line is a line that represents the relationship between the centroid, circumcenter and orthocenter of any triangle.
 - a. Construct an isosceles triangle and determine all four points of concurrency. How do the points relate to the Euler Line?
 - b. What happens if the triangle is equilateral?
2. Determine the coordinates of the centroid of the triangle on the coordinate grid.



Review

1. Write a conjecture about points on the perpendicular bisector of a line segment. Then, write the converse of the conjecture.
2. Write a conjecture about the sides of an equilateral triangle. Then, write the converse of the conjecture.
3. Determine whether each statement is biconditional.
 - a. If a figure is a square, then it is a rectangle.
 - b. If two angles are congruent, then they have the same measure.