Triangle Segments & Centers - Can You Match the Term?

WORD BANK

Centroid • Altitude • Midpoint • Angle Bisector • Circumcenter • Median • Orthocenter • Perpendicular Bisector • Incenter

Instructions:

Fill in the blank with the correct term from the word bank. Some answer choices may be used more than once, or not at all.

1. The point where all three medians of a triangle intersect is called the _____.
2. A segment that connects a vertex to the midpoint of the opposite side is a _____.
3. The _____ of a triangle is always located inside the triangle, no matter the type of triangle.
4. The point that divides a segment into two congruent parts is the _____.
5. A _____ is a segment that is perpendicular to a side of a triangle and cuts that side in half.
6. The point where all three perpendicular bisectors of a triangle meet is the _____.
7. In an obtuse triangle, the _____ and _____ don't lie inside the triangle.
8. A segment drawn from a vertex that forms a right angle with the opposite side is called an _____.
9. The point where all three altitudes of a triangle intersect is the _____.
10. In a right triangle, the _____ lies on the triangle rather than inside or outside.
11. A segment that splits an angle into two equal angles is an _____.
12. The point where all three angle bisectors meet is the _____.
13. A triangle's balancing point, located two-thirds of the way down each median, is the _____.

14. A segment that does **not** have to start at a vertex but still bisects a side is a _____.

ANSWER KEY

1. Centroid
2. Median
3. Incenter, Centroid
4. Midpoint
5. Perpendicular Bisector
6. Circumcenter
7. Circumcenter, Orthocenter
8. Altitude
9. Orthocenter
10. Orthocenter
11. Angle Bisector
12. Incenter
13. Centroid
14. Perpendicular Bisector

Triangle Segments & Points of Concurrency Recap

1. Median → Centroid

- A **median** is a segment drawn from a vertex to the midpoint of the opposite side.
- The **centroid** is the point where all three medians intersect.
- It is always located inside the triangle and is considered the triangle's balancing point.
- **Special rule:** The centroid divides each median into a **2:1 ratio** - the section from the vertex to the centroid is **twice as long** as the section from the centroid to the midpoint. (Or: the centroid is **2/3 of the way** down each median from the vertex.)

2. Perpendicular Bisector → Circumcenter

- A **perpendicular bisector** is a segment that cuts a side in half at a right angle and does *not* have to begin at a vertex.
- The **circumcenter** is the point where all three perpendicular bisectors meet.
- It is the center of the triangle's circumscribed circle (circle around the triangle).
- Location varies: inside (acute), on the triangle (right), outside (obtuse).

3. Angle Bisector → Incenter

- An **angle bisector** is a segment that divides an angle into two congruent angles.
- The **incenter** is the point where all three angle bisectors intersect.
- It is always inside the triangle and is the center of the inscribed circle (circle inside the triangle).

4. Altitude → Orthocenter

- An **altitude** is a segment drawn from a vertex and perpendicular to the opposite side (or the line that extends the opposite side).
- The **orthocenter** is the point where all three altitudes intersect.
- Location varies: inside (acute), on the triangle (right), outside (obtuse).