***Mystery of the Points***

Answer the questions below. When appropriate perform constructions using a compass and straight-edge cleanly and neatly. Write the steps below the construction.

What is a Circumcenter?

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Construct the Circumcenter of the given triangle.

What is a Orthocenter?

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Construct the Orthocenter of the given triangle.

What is a Centroid?

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Construct the Centroid of the given triangle.

What is an Incenter?

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Construct the Incenter of the given triangle.

Use Geogebra to answer the following questions.

1. Is the Circumcenter always inside the triangle? Try moving the points of the triangle. \_\_\_\_\_\_\_\_
2. Is the Incenter always inside the triangle? Try moving the points of the triangle. \_\_\_\_\_\_\_\_
3. Is the Orthocenter always inside the triangle? Try moving the points of the triangle. \_\_\_\_\_\_\_\_
4. Is the Centroid always inside the triangle? Try moving the points of the triangle. \_\_\_\_\_\_\_\_
5. Is there a triangle where the Circumcenter, the Incenter, the Orthocenter, and the Centroid are the same? If so, what kind of triangle is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Is there any relationship between the Circumcenter, the Orthocenter, and the Centroid? If so, what is it?

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