

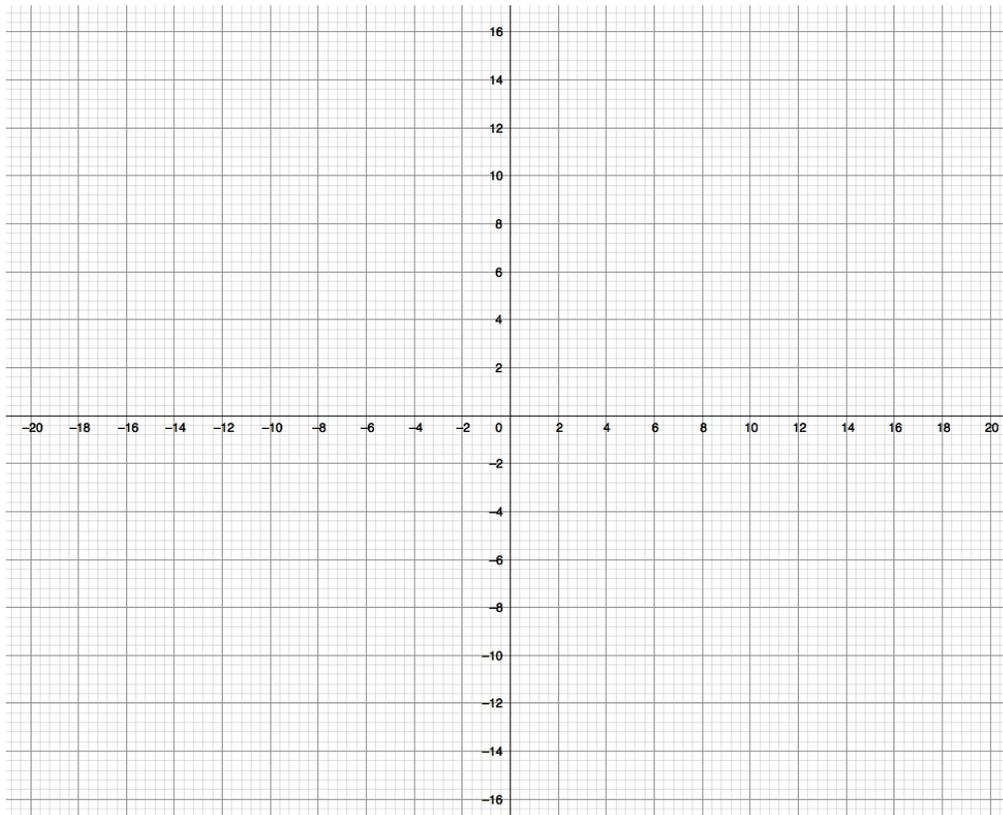
Triangle Centres

Circumcentre

The *circumcentre* is the point where the three perpendicular bisectors of a triangle meet.

To see this:

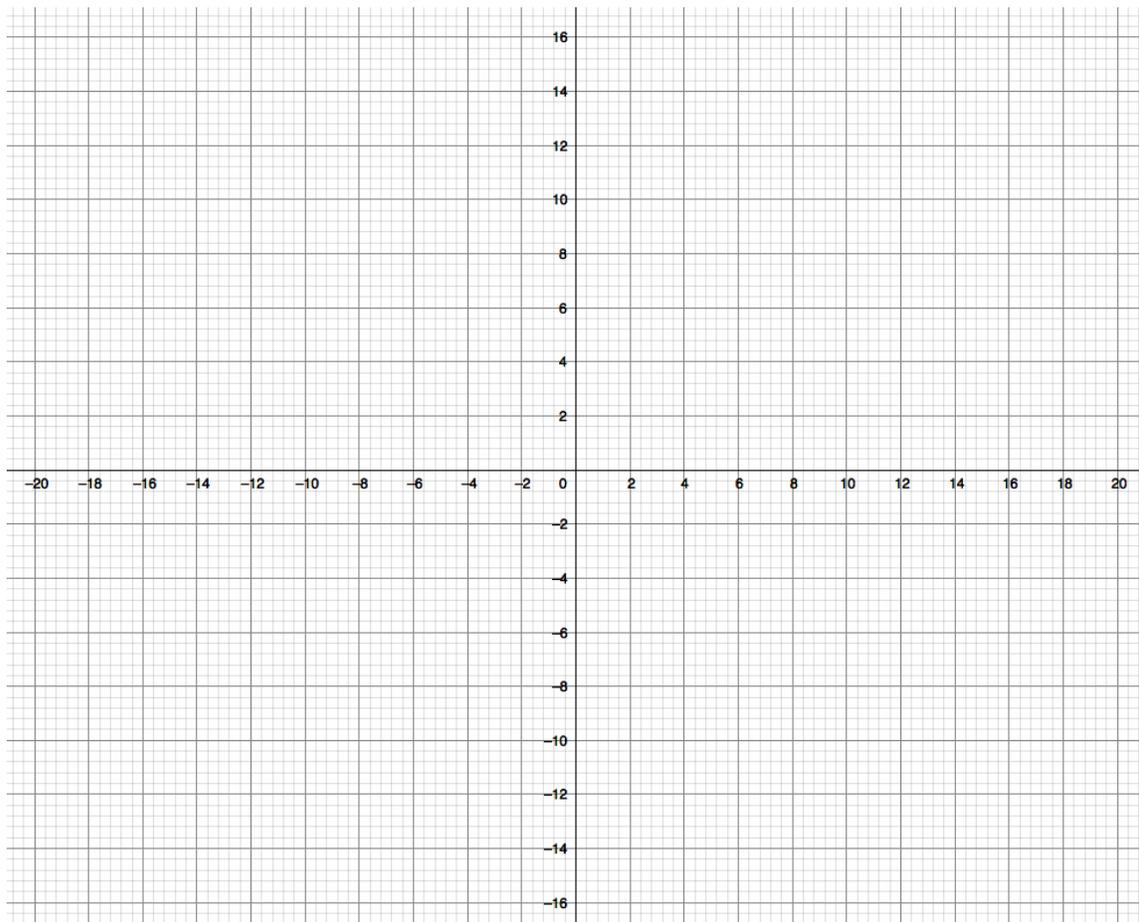
- Use [Geogebra Classic](#) to plot the triangle defined by the points $D(-9, 2)$, $E(0, 4)$, and $F(5, -6)$.
 - Construct the midpoints of each side of the triangle.
 - Construct the three perpendicular bisectors. Change the line style so they are dashed.
 - Construct the circumcentre. Select the point, then type *Circumcentre*.
 - Now pick one of the perpendicular bisectors. In point form, describe: using algebra, how could you find the equation that defines this line?
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- If you had the equation for two perpendicular bisectors, how could you use algebra to determine where they meet?
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- Reproduce your Geogebra construction in the space below. Use a ruler.



Orthocentre

The *orthocentre* is the point where the three altitudes of a triangle meet. To see this:

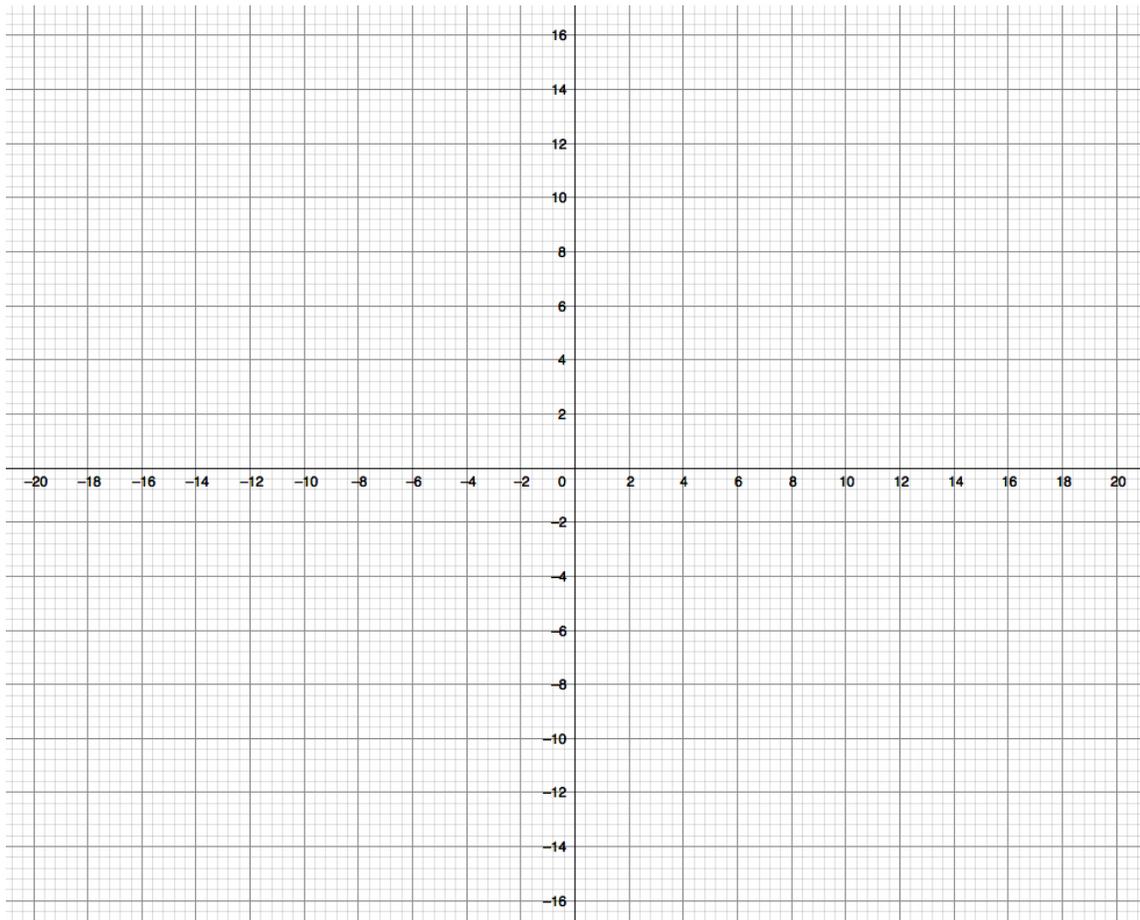
- Use Geogebra Classic to plot the triangle defined by the points $A(8, 2)$, $B(-3, 5)$, and $C(5, 11)$.
 - Construct all three altitudes. Change the line style so they are dashed.
 - Construct the orthocentre. Select the point, then type *Orthocentre*.
 - Now pick one of the altitudes. In point form, describe: using algebra, how could you find the equation that defines this line?
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- If you had the equation for two altitudes, how could you use algebra to determine where they meet?
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- Reproduce your Geogebra construction in the space below. Use a ruler.



Centroid

The *centroid* is the point where the three medians of a triangle meet. To see this:

- Use Geogebra Classic to plot the triangle defined by the points $X(-7, 5)$, $Y(7, 3)$, and $Z(-3, -5)$.
 - Construct the midpoints of each side of the triangle.
 - Construct the three medians. Change the line style so they are dashed.
 - Construct the centroid. Select the point, then type *Centroid*.
 - Now pick one of the medians. In point form, describe: how could you find the equation that defines this line?
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- If you had the equation for two medians, how could you use algebra to determine where they meet?
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- Reproduce your Geogebra construction in the space below. Use a ruler.



Practice

Go back to one of the three triangle centres noted above (your choice).

Find the exact co-ordinates of the triangle centre noted.

Check your work by comparing to your Geogebra sketch.