Bacharach

Euler Line Equations
Definitions -
Median: line segment connecting the vertex of a triangle to an opposite midpoint
Perpendicular Bisector: line bisecting a line segment and perpendicular to it
Altitude: line segment from the vertex of a triangle to an opposite side (or its extension) and perpendicular to it
Assume below that $a,b,c,d > 0$
Assessment: - Q1,2,3: +5% total on one test; Q3,4,5,6: +3% each on one test

1. How many medians are needed to determine the location of the centroid?
2. How many points of concurrency are needed to determine the equation of the Euler line?
3. For a right triangle, where are the circumcenter and the orthocenter?
4. Find the equation of the Euler line for a triangle with points at $(0,0)$, $(0,4)$, $(6,0)$.
5. Find the equation of the Euler line for a triangle with points at $(0,b)$, $(0,d)$, $(a,b)$.
6. Find the equation of the Euler line for a triangle with points at $(0,2)$, $(6,2)$, $(4,4)$.
7. Find the equation of the Euler line for a triangle with points at $(0,b)$, $(a,b)$, $(c,d)$.