20. If perpendiculars be dropped from the angular points of a triangle on the opposite sides, shew that the sum of the squares on the sides of the triangle is equal to twice the sum of the rectangles, contained by the perpendiculars and that part of each intercepted between the angles of the triangles and the point of intersection of the perpendiculars.

21. When two circles intersect, their common chord bisects their common tangent.

22. Two circles intersect in A and B. Two points C and D are taken on one of the circles; CA, CB meet the other circle in E, F, and DA, DB meet it in G, H: shew that FG is parallel to EH.

23. A and B are fixed points, and two circles are described passing through them; CP, CP' are drawn from a point C on AB produced, to touch the circles in P, P'; shew that $CP=CP'$.

24. From each angular point of a triangle a perpendicular is let fall upon the opposite side; prove that the rectangles contained by the segments, into which each perpendicular is divided by the point of intersection of the three, are equal to each other.

25. If from a point without a circle two equal straight lines be drawn to the circumference and produced, shew that they will be at the same distance from the centre.

26. Let O, O' be the centres of two circles which cut each other in A, A'. Let B, B' be two points, taken one on each circumference. Let C, C' be the centres of the circles BAB', $BA'B'$. Then prove that the angle CBC' is the supplement of the angle $OA'O'$.

27. The common chord of two circles is produced to any point P; PA touches one of the circles in A; PBC is any chord of the other: shew that the circle which passes through A, B, C touches the circle to which PA is a tangent.

28. Given the base of a triangle, the vertical angle, and the length of the line drawn from the vertex to the middle point of the base: construct the triangle.