

364. If the perpendiculars from two fixed points on a straight line passing between them be in a given ratio, the straight line must pass through a third fixed point.

365. Find a straight line such that the perpendiculars on it from three given points shall be in a given ratio to each other.

366. Through a given point draw a straight line, so that the parts of it intercepted between that point and perpendiculars drawn to the straight line from two other given points may have a given ratio.

367. A tangent to a circle at the point A intersects two parallel tangents at B, C , the points of contact of which with the circle are D, E respectively; and BE, CD intersect at F : shew that AF is parallel to the tangents BD, CE .

368. P and Q are fixed points; AB and CD are fixed parallel straight lines; any straight line is drawn from P to meet AB at M , and a straight line is drawn from Q parallel to PM meeting CD at N : shew that the ratio of PM to QN is constant, and thence shew that the straight line through M and N passes through a fixed point.

369. Shew that the diagonals of a quadrilateral, two of whose sides are parallel and one of them double of the other, cut one another at a point of trisection.

370. A and B are two points on the circumference of a circle of which C is the centre; draw tangents at A and B meeting at T ; and from A draw AN perpendicular to CB : shew that BT is to BC as BN is to NA .

371. In the sides AB, AC of a triangle ABC are taken two points D, E , such that BD is equal to CE ; DE, BC are produced to meet at F : shew that AB is to AC as EF is to DF .

372. If through the vertex and the extremities of the base of a triangle two circles be described intersecting each other in the base or base produced, their diameters are proportional to the sides of the triangle.

373. Find a point the perpendiculars from which on the sides of a given triangle shall be in a given ratio.

374. On AB, AC , two adjacent sides of a rectangle, two similar triangles are constructed, and perpendiculars are drawn to AB, AC from the angles which they subtend, intersecting at the point P . If AB, AC be homologous