

333. In the figure of IV. 10 if AF be the diameter of the smaller circle, DF is equal to a radius of the circle which circumscribes the triangle BCD .

IV. 11 to 16.

334. The straight lines which connect the angular points of a regular pentagon which are not adjacent intersect at the angular points of another regular pentagon.

335. $ABCDE$ is a regular pentagon; join AC and BE , and let BE meet AC at F ; shew that AC is equal to the sum of AB and BF .

336. Shew that each of the triangles made by joining the extremities of adjoining sides of a regular pentagon is less than a third and greater than a fourth of the whole area of the pentagon.

337. Shew how to derive a regular hexagon from an equilateral triangle inscribed in a circle, and from the construction shew that the side of the hexagon equals the radius of the circle, and that the hexagon is double of the triangle.

338. In a given circle inscribe a triangle whose angles are as the numbers 2, 5, 8.

339. If $ABCDEF$ is a regular hexagon, and AC , BD , CE , DF , EA , FB be joined, another hexagon is formed whose area is one third of that of the former.

340. Any equilateral figure which is inscribed in a circle is also equiangular.

VI. 1, 2.

341. Shew that one of the triangles in the figure of IV. 10 is a mean proportional between the other two.

342. Through D , any point in the base of a triangle ABC , straight lines DE , DF are drawn parallel to the sides AB , AC , and meeting the sides at E , F : shew that the triangle AEF is a mean proportional between the triangles FBD , EDC .