(*b*) A, B, C, D, E are five vertices, in order, of the figure whose sides are AC, CE, EB, BD and DA. Find the sum of the angles ACE, CEB, EBD, BDA and DAC.

3. (*a*) If a line be divided into two equal, and also into two unequal parts, the rectangle contained by the unequal parts, together with the square on the line between the points of section, is equal to the square on half the line. Euc. II, 5.

(*b*) If a line be divided into two parts the rectangle contained by the parts is greatest, and the sum of the squares on the parts is least when the parts are equal.

4. (*a*) The angle in a semi-circle is a right angle; the angle in any other segment is acute or obtuse according as the segment is greater or less than a semi-circle. Euc. III, 31.

(*b*) If through a fixed point any number of chords be drawn to the same circle the middle points of the chords lie on a circle.

5. (*a*) Inscribe a circle in a given triangle.

(*b*) Show that the problem to draw a circle to touch three straight lines which form a triangle has four solutions, and find them.

6. (*a*) Give a definition of similar triangles and of homologous sides, and prove that in similar triangles the homologous sides are proportional.

(*b*) ABC is a triangle and DE is parallel to AC, D being on AB and E on CB. DC and EA intersect in O. Show that BO produced bisects AC.

B.

7. A, B, C, D are the vertices of a square and A, E, F the vertices of an equilateral triangle, both inscribed in the same circle.

Find the angle between BE and DF, and also between DE and BF.

8. A and B are two points on the same side of a line L. Find a point P, on L, such that the sum of PA and PB may be the least possible.

9. Describe a circle, with a given radius, to touch a given circle and pass through a given point.

Show that there are two solutions, and examine the conditions under which the two

solutions become the same, or become impossible.

10. A, B, C, D is a square and AA', BB', CC', DD' are perpendiculars upon any line L.

Show that the square is equal to the difference between the sum of the squares on AA' and CC', and twice the rectangle contained by BB' and DD'.

11. Two tangents are drawn from a point, P, to a circle whose centre is O, and the chord, joining the points of contact of the tangents, cuts OP in Q.

Show that the rectangle contained by OP and OQ is equal to the square on the radius of the circle.

12. Similar triangles are to one another in the duplicate ratio of their homologous sides.

13. Draw two lines parallel to the base of a triangle so as to trisect the area of the triangle.

14. The rectangle contained by the diagonals of any quadrilateral inscribed in a circle is equal to the sum of the rectangles on its opposite sides in pairs.

MODERN LANGUAGES.

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EXERCISES IN ENGLISH.

The closing scene of French dominion in Canada was marked by circumstances of deep and peculiar interest. The pages of romance can furnish no more striking episode than the Battle of Quebec. The skill and daring of the plan which brought on the combat, and the success and fortune of its execution, are unparalleled. A broad, open plain, offering no advantages to either party, was the field of fight. The contending armies were nearly equal in military strength if not in numbers. The chiefs of both were already men of honourable fame.

1. Substitute words of equivalent meaning for *dominion, peculiar, furnish, episode, party, chiefs.*

2. "Of deep and peculiar interest." Change the form so as to do without *of.*