8. Prove the rule for finding the L. C. M. of two or more quantities. Find the L. C. M. of

$(x+y)(x^2+y^2)+2xy-1$, and

$(x+y-2)(x+y)^2+2(1-xy)(x+y)+2xy-1$.

9. Solve the equations:

(i) $ax^2+bx+c=0$. (ii) $x^3-2x-4=0$.

$$\text{(iii)}\quad \left.\begin{array}{l} x^2+xy+y^2=a^2 \\ x+\sqrt{xy}+y=b \end{array}\right\}$$

$$\text{(iv)}\quad \left.\begin{array}{l} x^p y^q = a^p b^q c \\ x^q y^p = a^p b^q d \end{array}\right\}$$

10. Find the sum of n terms of a series in Geometric Progression.

Sum to $\overline{2p+1}$ terms:

$$\frac{1}{a}\sqrt{b}-\frac{1}{a}\sqrt{a}+\frac{1}{b}\sqrt{b}-\frac{1}{b}\sqrt{a}+\ldots$$

11. If $(b-c)x+(c-a)y+(a-b)z=0$,

shew that $\dfrac{b-c}{cy-bz}$ = anal. = anal.

EUCLID.

1. Define the terms *plane rectilineal angle, rectangle, gnomon, circle, segment of a circle.*

If two triangles have two sides of the one equal to two sides of the other, each to each, and have likewise the angles contained by those sides equal to one another, their bases, or third sides, shall be equal; and the two triangles shall be equal; and their other angles shall be equal, each to each, namely, those to which the equal sides are opposite.

2. If two lines bisect the angles at the base of a triangle, the line joining their point of intersection and the vertex bisects the vertical angle.

3. The complements of the parallelograms which are about the diagonal of any parallelogram are equal to one another.

4. In every triangle, the square of the side subtending any of the acute angles is less than the squares of the sides containing that angle, by twice the rectangle contained by either of these sides, and the straight line intercepted between the perpendicular let fall upon it from the opposite angle, and the acute angle.

5. If any point be taken in the diameter of a circle which is not the centre, of all the straight lines which can be drawn from it to the circumference, the greatest is that in which the centre is, and the other part of that diameter is the least; and, of any others, that which is nearer to the line which passes through the centre is always greater than one more remote. And from the same point there can be drawn only two straight lines that are equal to one another, one upon each side of the diameter.

6. Draw a straight line from a given point, either without or in the circumference, which shall be a tangent to a given circle.

7. About a given circle, describe a triangle equiangular to a given triangle.

8. If a straight line be drawn parallel to one of the sides of a triangle, it must cut the other sides, or those sides produced, proportionally.

9. In right angled triangles, the rectilineal figure described upon the side opposite to the right angle is equal to the similar and similarly described figures upon the sides containing the right angle.

10. Describe a triangle, having given the base, area, and vertical angle.

11. ACB is a triangle right angled at C; AD bisects the angle BAC and AE bisects the opposite side. Prove that DE is to CE in the duplicate ratio of CD to CA.

12. ABC is a triangle in the circle ABC; the arc BC is bisected in D; prove that $AD^2 = BD^2 + AC \cdot AB$.

13. If three lines be in continued proportion, the first is to the third as the square of the difference between the first and second, to the square of the difference between the second and third.

14. Two semi-circles AEB, AFD are drawn on the sides AB, AD of the rectangle $ABCD$;