

2. Bisect a given (irregular) quadrilateral by a line drawn from one of its angular points.

3. If a straight line be bisected and produced to any point, the square on the whole line thus produced and the square on the part of it produced are together double of the square on half the line bisected and of the square of the line made up of the half and the part produced.

Produce a given straight line so that the square on the line made up of the whole and the part produced shall be double of the square on the part produced.

4. If two straight lines cut one another within a circle, the rectangle contained by the segments of one of them is equal to the rectangle contained by the segments of the other.

State and prove the converse of this proposition.

5. Describe an isosceles triangle having each of the angles at the base double of the third angle.

In Euclid's figure show that the base of the required isosceles triangle is (a) the side of a regular decagon inscribed in the larger circle, and (b) equal to  $\frac{1}{2}r(\sqrt{5}-1)$  where  $r$  is the radius of the circle.

6. Define the conditions under which the first of four magnitudes has to the second the same ratio that the third has to the fourth. State the converse of this definition.

7. In a right angled triangle, the rectilineal figure described upon the hypothenuse is equal to the sum of the similar and similarly described figures upon the sides containing the right angle. (VI. 31). Hence prove I. 47. Show whether I. 47 has been used in any proposition upon which the proof of Prop. 31, Bk. VI depends.

WE are requested by the Education Department to state that it is the intention to prepare papers for the next Entrance Examination to High Schools, containing a greater number of questions than the candidates will be required to answer, thus giving them a choice of eight or ten on the paper. Also to make a correction in the circular sent out some time ago, in which it was stated that candidates would be required to submit drawing books Nos. 4 and 5 to the examiners; it should have read, 4 or 5.

## NOTES ON FOURTH BOOK LESSONS FOR ENTRANCE EXAMINATION, DECEMBER, 1886.

### THE VISION OF MIRZA.

#### First Reading.

*Oriental.*—Belonging to the East. Notice the beauty of derivation; it originally meant belonging to the rising sun.

*Mirza.*—A Persian title, meaning "son of a prince."

*Moon.*—Month. Both words come from the same root. The proper meaning of month is the length of a moon.

*The custom of my forefathers.*—Mohammedan customs, for this, it must be borne in mind, is supposed to be the translation of an Eastern manuscript.

*Bagdad.*—A city on the river Tigris.

*Vanity.*—Uselessness.

*Habit.*—Dress.

*Vale of misery.*—This world.

*Measured out by the sun.*—The sun may be said to measure out time into days and years. Eternity itself is not counted by days and years, for it is immeasurable.

*Entire.*—Whole.

*An hundred.*—Now written "a hundred." Why "an" here?

*Threescore and ten.*—"The days of our years are threescore years and ten."

*At first of a thousand arches.*—Before the Flood the age of man was nearly a thousand years as the Scripture account is generally understood.

*Innumerable trap-doors.*—Different kinds of death as accidents or diseases.

*Set ve' y thick at the entrance.*—Alluding to the greater mortality among the young and the aged than among those in middle life.

*A kind of hobbling march, etc.*—Those who live to 'e over the allotted age of "threescore years and ten."

#### Second Reading.

*This wonderful structure.*—The bridge of human life.

*Some with scimitars.*—Violent death any kind, in war or otherwise