

## SECOND CLASS CERTIFICATES, JULY, 1876.

TIME—THREE HOURS.

*N B.—Algebraic symbols must not be used. Candidates who take Book II will omit Questions 1, 2 and 3, marked\*.*

*Ques.*

- 16 \*1. The angles at the base of an isosceles triangle are equal to one another; and if the equal sides be produced, the angles on the other side of the base shall be equal to one another.
- 8 Where does Euclid require the second part of this theorem?
- 16 \*2. If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by two sides of one of them greater than the angle contained by the two sides equal to them of the other, the base of that which has the greater angle shall be greater than the base of the other.
- 6 Why the restriction "Of the two sides DE, DF, let DE be the side which is not greater than the other"?
- 16 \*3. If two triangles have two angles of the one equal to two angles of the other, each to each, and have also the sides adjacent to the equal angles in each, equal to one another, then shall the other side be equal, each to each; and also the third angle of the one to the third angle of the other. (Prove by superposition.)
- 8 What propositions in Book I are thus proved?
- 16 4. If a straight line fall upon two parallel straight lines, it makes the alternate angles equal to one another, and the exterior angle equal to the interior and opposite angle on the same side; and also the two interior angles on the same side together equal to two right angles.
- 8 What objection may be taken to the twelfth axiom?
- 2 What is its converse?
- 16 5. In any right-angled triangle, the square which is described on the side subtending the right angle is equal to the squares described on the sides which contain the right angle.
- Prove also by dissection and superposition.
- Draw through a given point between two straight lines not parallel a straight line which shall be bisected in that point.
- The perpendiculars from the angles of a triangle on the opposite sides meet in a point.