

3. If from any internal point, not the center, straight lines are drawn to the circumference of a circle, then the greatest is that which passes thru the center; and the least is the remaining part of that diameter. And of any other two such lines the greater is that which subtends the greater angle at the center.

4. If the straight line AB be divided internally in medial section at x , prove that $Ax = \frac{a\sqrt{b}}{2} - \frac{a}{2}$ when AB is represented by a .

5. P, Q, R are the middle points of the sides of a triangle, and x is the foot of the perpendicular let fall from one vertex on the opposite side: Prove that the four points P, Q, R, x are concyclic.

6. Show how to divide a given straight line so that the square on one part may be double of the square on the other.

7. Two circles of diameters of 74 and 40 inches respectively, have a common chord 2 feet in length: find the distance between their centers. Draw the figure (1 cm to represent 10") and verify your result by measurement.

8. Two circles intersect at B and C , and the two direct common tangents, AE and DF are drawn: If the common chord is produced to meet the tangents at G and H , prove that $GH^2 = AE^2 + BC^2$.

GERMAN —XI.

11 a. m. to 1 p. m., Tuesday, 25 June, 1918.

1. Translate: Die ganze Nacht hindurch arbeitete der Schmied, und wenn er so mit dem grossen Hammer das Eisen zusammenschlug, sprach er bei jedem Schlag: Landgraf, werde hart! Landgraf werde hart, wie dies Eisen! und schalt ihn, und sprach weiter: Du böser, unseliger Herr! was nüttest du mit deinem Leben den armen Leuten?

(a) Give the principal parts of: *zusammenschlug* and *sprach*. Account for the position of *er* in *sprach er*. In what other cases does the subject follow the verb; illustrate.

2. Mention the six auxiliaries of mood, giving the *past tense* (1st pers. sing.) of each. Explain the difference between the two *passive* forms: Der Brief *ist* geschrieben. Der Brief *wird* geschrieben. Translate: I have been advised to go to France. The books which were lost, have been found.

3. Translate: Es war, als ob diese Thränen des alten Invaliden wie heisse Tropfen dem Herrn auf's Herz fielen, so eilte er in diesem Augenblick auf den Invaliden zu, reichte dem erstaunten Alten ein Goldstück und sagte: "Leih mir eure Geige ein Stündchen."

(a) Principal parts of: *war*, *fielen*, *sagte*, *leiht*. What are the distinctive features between *regular* and *irregular* verbs? Explain fully, giving illustrations.

4. Translate into German: I have forgotten my watch, what shall I do? The boys lost their way in the wood: they began to cry. As he could not come, he wrote me a long letter. Do not go out now, for it is snowing. Easter (Ostern) this year, falls on the 31st (letters) of March.

5. Translate: Eines Tages, als Professor Chopin nicht zu Hause war, entstand in der Pension ein furchtbarer Lärm. Der anwesende Lehrer wusste sich auf keine Weise Rat zu schaffen. Da trat zum Glück Friedrich, der junge Sohn des Professors, in den Saal.