

199TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Monday, September 13, 1909—9.15 a. m. to 12.15 p. m., only

Answer two questions from each group. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 12½ credits. Papers entitled to less than 75 credits will not be accepted.

Group I 1 The divisor is eight times the remainder and the quotient is seven times the remainder; what is the dividend if the remainder is 120? Give explanation.

2 Prove that an even number that is divisible by an odd number is also divisible by twice that odd number.

3 Derive the formula for the sum of an arithmetic series of n terms.

Group II 4 Using contracted division, find the quotient of 487.24 divided by 1.003675 correct to 1700 decimal places.

5 An automobilist setting out from Bordeaux at 5 hr 1 min. 28 sec. a. m., by riding continuously reached Paris, 590 km away, at 7 hr 36 min. 25 sec. a. m. of the following day; what was his average speed in miles per hour?

6 In an arithmetic a problem was printed, "Add $\frac{1}{14\frac{1}{3}}$, $\frac{1}{19\frac{1}{4}}$ " the denominator of one fraction being omitted; the answer given was $\frac{1}{8}$. What was the missing denominator?

Group III 7 A merchant bought \$6500 worth of goods for cash and sold them at 15% advance, receiving in payment a four months note which he at once got discounted at 6%; how much did he make?

8 If the interest on £650 for 5 months is £12 3s. 9d., what is the rate per cent?

9 The expense of building a public bridge was \$1260.52, which was defrayed by a tax on the property of the town; the rate of taxation was $3\frac{1}{4}$ mills on one dollar. What was the valuation of the property? If the collector's commission is 1% how much will he receive?

Group IV 10 Find the diameter of a sphere whose volume is equal to the sum of the volumes of three spheres having diameters 3 in., 4 in. and 5 in. respectively.

11 Find the diagonal of a rectangular solid whose dimensions are 6 in., 8 in. and 10 in.

12 A wheel 30 in. high is found to have made during a certain journey 67,802 revolutions; find in miles the length of the journey.