

187TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Tuesday, September 26, 1905—9.15 a. m. to 12.15 p. m., only

Answer eight questions but no more. 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 75 or more credits will be accepted.

1 Prove that dividing a number by 25 will give the same result as multiplying it by 4 and moving the decimal point two places to the left.

2 Mention *one* advantage that is claimed for (a) the common system over the metric, (b) the metric system over the common. What is *one* serious obstacle in the way of changing from the common to the metric system?

3 Deduce a rule for reducing a pure circulating decimal to a common fraction.

4 Find to the nearest inch, the size of the largest square stick of timber that can be cut from a circular log 2 feet in diameter. Find the number of board feet in the stick of timber if it is 12 feet long, no allowance being made for waste.

5 Assuming that a cubic foot of water weighs $62\frac{1}{2}$ pounds, find the pressure on a square inch at the bottom of a tank 8 feet deep.

6 Find the sum of the infinite series 10, 8, 4 . . . etc.

7 Prove that the least common multiple of two numbers is equal to their product divided by their greatest common divisor.

8 In a town whose assessed valuation is \$2,365,750, a tax of \$17,460 is to be raised; how much will be the tax of a person assessed for \$25,350? [Use contracted division and multiplication and find the rate sufficiently accurate to give the final result correct to one cent.]

9 Find the radius of a sphere equal in volume to the sum of three spheres whose radii are respectively 9 inches, 12 inches and 15 inches.

10 On a certain day the mercury stood as follows: from 6 till 9 a. m. 76° ; from 9 a. m. till 2 p. m. 80° ; from 2 till 4 p. m. 78° ; from 4 till 7 p. m. 77° ; from 7 p. m. till 6 a. m. the next day 72° . Find the mean temperature of the day.