

High School Department

157TH EXAMINATION

ADVANCED ARITHMETIC

Monday, January 23, 1899—9.15 a. m. to 12.15 p. m., only

Answer 10 questions but no more. If more than 10 are answered only the first 10 answers will be considered. Give each step of solution, indicating the operations by appropriate signs. Use cancelation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it Ans. Each complete answer will receive 10 credits. Papers entitled to 75 or more credits will be accepted.

- 1 Define present worth, power, proportion, root, annuity.
- 2 Change 243576 in the decimal scale to an equivalent number whose scale is 8.
- 3 Multiply 57.2958 by 1.732 and divide the product by 2.236, finding the result correct to three decimal places and using contracted methods of multiplication and division of decimals.
- 4 Find by division the greatest common divisor of 2041 and 8476; demonstrate clearly the correctness of this method.
- 5 Reduce .6571428 to a common fraction.
- 6 A druggist buys 20 lbs. avoirdupois of potassium bromid at 60 cents a pound, and sells it at 10 cents an ounce troy; find his per cent of gain.
- 7 Express in feet or inches each of the following: cubit, ell, hand, fathom, chain.
- 8 A dealer buys a ship-load of coal at \$4 a long ton and sells it at \$5 a short ton, thus gaining \$1600; find the number of long tons bought.
- 9 A merchant buys goods listed at \$1200 and gets trade discounts of 33 $\frac{1}{3}$, 20 and 10 with 90 days credit, or a further discount of 2% for cash. How much will he gain by paying cash if he can borrow money at 6%?
- 10 A merchant buys 100 pieces of silk in Paris at 400 francs a piece, exchange at 5.16; the shipping charges are \$60, and the duty is 45% ad valorem. If the silk is sold at \$150 a piece, what is the per cent of gain?
- 11 Find in millimeters the edge of a cube equivalent to a sphere whose radius is 3 decimeters.
- 12 Find in gallons the capacity of a cylindric tank 30 feet long and 4 feet in diameter.
- 13 When it is 3 p. m. at Rome, longitude 12° 27' east, it is 8.20 a. m. at Chicago; find the longitude of Chicago.
- 14 Find the sum of 12 terms of the series 9, 6, 4, etc.
- 15 On a note for \$800 at 6%, dated March 9, 1897, the following payments have been made: May 15, 1897, \$120; Aug. 1, 1897, \$100; Jan. 19, 1898, \$200; Sept. 21, 1898, \$250. Find the amount due to-day.