

University of the State of New York
Examination Department

119th examination

ADVANCED ARITHMETIC

Monday, March 12, 1894 — 9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

Answer 10 questions but no more. Division of groups is not allowed. If more than 10 questions are answered only the first 10 of these 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.

- 1 Prove that a common divisor of two numbers is a divisor of their sum, of their difference and of their product.
- 2 I sell one half of an invoice of goods at an advance of 15% over cost, and the remainder so that there is a loss of 10% on the whole; what was the per cent of loss on the latter half?
- 3-4 A gallon contains 231 cubic inches; a cubic foot of water weighs 62.5 pounds; mercury is 13.5 times as heavy as water. How many gallons of mercury will weigh a ton?
- 5 At 10 a. m. Jan. 5 a watch is 5 minutes too slow; at 2 p. m. of Jan. 9 it is 3 minutes, 20 seconds too fast. When did it mark correct time?
- 6 How much will the product of two numbers be increased by increasing each of the numbers by one? Give proof.
- 7-8 A franc is worth 9.5 d; a mark is worth 11.7 d; a pound sterling is worth \$4.86. Find the value of \$100 in each of the three other currencies.
- 9 Insert 4 geometric means between 3 and 96. Insert 2 arithmetic means between 3 and 96.
- 10 Find the exact interest on \$590 from Sept. 18, 1893 to March 1, 1894 at $4\frac{1}{2}\%$.
- 11 Is the merchants' rule or the United States rule for computing partial payments more favorable to the debtor? Give reasons.
- 12-13 If it requires 40 minutes for a pipe four inches in diameter to fill a tank 20 feet by 10 feet by 6 feet, how long will it take a pipe three inches in diameter to fill a tank 30 feet by 12 feet by 8 feet?
- 14 Find the side of a square which is equal in area to a right triangle whose base is 24 feet and hypotenuse 40 feet.
- 15 Find the cube root of 1796.03 to two places of decimals.