

University of the State of New York

Examination Department

118th examination

ADVANCED ARITHMETIC

Monday, January 22, 1894 — 9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

Answer any 10 questions but no more. 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 Assuming that iron is 7.8 times as heavy as water, find the weight in kilograms of a round bar of iron .60 centimeters in diameter and 3 meters long.
- 2 Explain and illustrate a method of finding the least common multiple of fractions.
- 3 Indicate the following by signs: the difference of nine and five is multiplied by eight, this product is divided by 10 and the quotient increased by one, the sum is squared, increased by two, and the cube root of the result taken.
- 4 Find the sum of $23.\dot{3}$, $42.\dot{6}1$, $78.34\dot{5}2$ and reduce the resulting repetend to a common fraction.
- 5 What is the unit on which all our measures of length, area and volume are based? How is this standard determined?
- 6 State briefly the differences between the Julian and the Gregorian calendars.
- 7 A rectangular bin holds 1000 bushels; its length is twice its depth, and its depth is twice its width. Find its width.
- 8 The wheels of a sulky are $4\frac{1}{2}$ ft apart. In driving around a circular track the inner wheel traverses 1 mile, how far does the outer wheel go?
- 9 Two balls of lead weigh respectively $4\frac{1}{2}$ lb. and $121\frac{1}{2}$ lb. Find the ratio of their diameters.
- 10-11 Write a full analysis of the following: $\frac{2}{3}$ is $\frac{4}{5}$ per cent of how many times $\frac{5}{8}$?
- 12 I loan a certain sum of money for 1 year at 6% and one half as much at 4%; the amount received from both loans is \$237. Find the sums loaned.
- 13 Find the face of a note at 60 days without interest which will yield \$250 proceeds when discounted at a New York bank.
- 14-15 Find the square root of 104976 and illustrate each step of the work by diagram.