

Tuesday, January 22, 1907—9.15 a. m. to 12.15 p. m., only

Answer eight questions. 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 $12\frac{1}{2}$ credits. Papers entitled to 75 or more credits will be accepted if written by students in class A; those entitled to 60 or more credits will be accepted if written by students in class B.

1 Find the exact value of the quotient of $.32\bar{4}$ divided by $.048$.

2 A and B together have \$153; $\frac{3}{4}$ of A's money equals $\frac{2}{3}$ of B's. How much has each? Write full analysis in words.

3 Prove that every common divisor of two numbers is a divisor of (1) their sum, (2) their difference.

4 To every 6 gallons of milk 4 quarts of water are added; find the value of a pint of the mixture, pure milk being worth $3\frac{1}{4}$ ¢ a pint. Write full analysis in words.

5 Find in kilograms the weight of the water that may be contained in a cylindrical cistern 1.8 meters in diameter and 1.4 meters deep. Give explanation in full.

6 State and explain the relation of time to longitude. Explain standard time.

7 At what rate will \$656.50 amount to \$748.41 in 3 years 6 months? Write full analysis in words.

8 Through a broker a man bought and sold stock, thereby gaining $12\frac{1}{2}\%$; the stock sold at $99\frac{1}{8}$. Find the market quotation of the stock at the time of the purchase, brokerage in each case being $\frac{1}{8}\%$.

9 Form a proportion in which 3 is (1) one of the extremes, (2) a mean proportional. Find two numbers that are in the ratio of 2 to 5 and whose sum is 3.

10 The first term of a geometric progression is 500; the ratio is $1\frac{1}{10}$ and the last term is $805\frac{5}{10}$. Find the sum of the series. Write the formula used.

11 A circular park contains 196 acres 56 square rods; find the circumference of the park.

12 Give an explanation of the process of extracting the cube root of 2197, basing your explanation on the composition of the cube of the sum of two numbers.