186TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Monday, June 12, 1905—9.15 a. m. to 12.15 p. m., only

Answer eight questions but **no more.** *If more than eight are answered only the first eight answers will be considered. 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 Divide 29.58132 by 5.769803 and multiply the quotient by 46.8795. Find the result correct to *three* places of decimals, using the contracted method in each case.

2 If the subtrahend is an odd number the product of the minuend and the remainder will be an even number. Give proof when the minuend is (*a*) odd, (*b*) even.

3 A boy was hired to sell 50 oranges on condition that he receive ½¢ commission for every orange that he sold and forfeit 2½¢ for every orange that he ate; his whole commission was 16¢. How many oranges did he eat? Give full analysis in words.

4 A, B and C invest $3870 in a store; ⅓ of A's share is equal to ¼ of B's and to ⅕ of C's. Repairs cost $98.70 a year and taxes are at the rate of ½%. The store rents so as to pay 4% net on the investment. For how much does the store rent and how much does each partner receive?

5 A cylindric tank 3½ feet in diameter and 5 feet high is filled with snow; if 1 quart of snow will make ⅛ of a pint of water, how many gallons of water will result from melting the snow and how deep will the water be in the tank?

6 A man travels from New York, longitude 74° west, for 8 days 6 hours, when he finds that his watch, which gains 3 minutes a day, is 8 hours 20 minutes 10 seconds slow; what longitude has he reached?

7 When exchange is at 1½% discount, express the equivalent of $500 in (*a*) English pounds, (*b*) French francs, (*c*) German marks.

8 If ⅓ of the time past noon is the time to midnight, what is the time? Give analysis in full.

9 A standard candle is 3 feet and an electric light 12 feet from a wall on which they cast shadows of equal intensity;

find the candle power of the electric light. [The intensity of light varies inversely as the square of the distance from the source of illumination.]

10 Find the amount of $1000 for 5 years at 4% compound interest. Show the application of geometric progression to this example and write the formula used in solving by this method.

11 Find the difference between the proceeds of a bank note for $800 due in 90 days without interest and the present worth of a debt of $800 due in 90 days.

12 A man has $1600 invested in Erie first preferred stock at 80 that pays a semiannual dividend of 2%, and $980 in Union Pacific first preferred stock at 98 that pays a semiannual dividend of 2%; he sells the above stocks at cost and invests the proceeds in United States steel first preferred stock at 86, thereby increasing his annual dividend $90; find the per cent of quarterly dividend that the steel stock pays.