212TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Tuesday, January 19, 1915 — 9.15 a. m. to 12.15 p. m., only

Write at top of first page of answer paper (*a*) name of school where you have studied, (*b*) number of weeks and recitations a week in advanced arithmetic. The minimum time requirement is two recitations a week for a school year or four recitations a week for half a school year.

Answer eight questions.

1 The specific gravity of ice is .917. A cake of ice just supports a boy who weighs 96 ℔. How many cubic feet are there in the cake?

2 The first side of a triangle is 2″ longer than the second side, and the third side is 5″ longer than the second. If the first side is a mean proportional between the other two sides, find the three sides.

3 The capital of a company is $50,000 first preferred 4% stock, $40,000 second preferred 5% stock and $60,000 common stock; the annual profits are $10,100. If $1600 is placed in the reserve fund, at what rate % should a dividend be declared on the common stock?

4 The front wheel of a wagon is 11 feet in circumference and the hind wheel 13 feet. One spoke in each wheel is painted red. When the wagon starts all the red spokes are upright and are above the axle, and when the wagon stops the same spokes are uppermost again for the 533d time. How many miles does the wagon travel?

5 If a war indemnity of 5,000,000,000 francs were paid wholly in 20 franc gold pieces, the diameter of each being 2.1 cm, what would be the length in miles of a line formed by placing the gold pieces side by side?

6 The tank of a street sprinkler is 12 ft long and 12 ft 6.2 in. in circumference, outside measurements; if it is constructed of $1\frac{1}{2}$ in. lumber, with the outside of the heads set in 2 in. from the ends of staves, what is its capacity in gallons?

7 The base of a right-angled triangle is 20″ and the ratio of the hypotenuse to the other side is 13:12; find the hypotenuse and the other side.

8 A boy was required to multiply 7,846,052 by 49,916; reading *one* of the digits in one of the numbers incorrectly, he obtained 321,029,063,632 as a product. What digit did he mistake?

9 A tin pail is 14 inches in diameter at the top, 9 inches in diameter at the bottom and 10 inches deep; how many liquid quarts does it contain?

10 Find, to *five* places of decimals, the square root of 6, giving all the work.