

5. Briefly discuss British rule in India.
6. Explain the terms:—Prorogation, Dissolution, and Premature Dissolution, as applied to Parliament.
7. What is an "order-in-Council?"
8. State the duties of the Minister of Justice and the Secretary of State, and tell what you know of the "Civil Service."

### ALGEBRA.—X.

9 to 11 a. m., Wednesday, 26 June, 1918.

1. (a) If  $x=2$  is a root of the equation  $x^3-19x+30=0$ , find the other roots. (b) Find the highest common factor of  $3x^2+7x-6$ ,  $3x^2-11x+6$  and  $6x^2-13x+6$ .

2. A piece of work can be done by A working 6 days and B 21 days, or by A working 8 days and B 18 days. In what time could each of them complete it alone?

3. Solve:  $2x-3y+4z=4$   
 $3x+5y-7z=12$   
 $5x-y-8z=5$

4. (a) The angular points of a triangle are (6, 0), (3, 4), and (-2, 0). Construct the triangle and find its area. (b) Why is an equation of the first degree sometimes called a *linear* equation? Show that every equation of the form  $y=mx$  represents a straight line passing thru the origin.

5. Simplify  $\frac{1}{x-y} - \frac{1}{x+y} - \frac{2y}{x^2+y^2} - \frac{4y^3}{x^4+y^4}$

6. Solve for  $x$  and  $y$

$$x + \frac{ay}{a-b} = b$$

$$\frac{ax}{a+b} + y - b = 0.$$

7. Simplify  $\frac{2 + \sqrt{10}}{4\sqrt{2} + \sqrt{20} - \sqrt{18} - \sqrt{5}}$

8. The length of a field exceeds its breadth by 30 yards. If the field were square but of the same perimeter, its area would be  $\frac{1}{2}$  greater. Find the sides.

### PHYSICS.—X.

3 to 5 p. m., Wednesday, 26 June, 1918.

1. Why are the units of length, mass and time called fundamental units? Which of them are involved in the unit of velocity? The month and the year are units of time, but are not the most common in physical measurements. Give a more common unit. Give also three English and three French units of length and of mass.

2. The velocity of a ball rolling down a very gentle slope is at a certain instant 40 cm. per second, and its acceleration is 5 cm. per second per second. What will be its velocity half a minute later? Be careful to give the proper unit.

3. Describe the hydrometer, or some other apparatus for finding the density of liquids. A body when floating in water, displaces 12 cc. What is the density of the liquid in which when floating it displaces 18 cc.?