

Question Department.

TEACHER.—Please solve the following questions:

- (1) $\frac{bx-ag}{cy-az} = \frac{cx-as}{by-ax} = \frac{z+y}{x+z}$ then will each of these

fractions be equal to $\frac{x}{y}$ unless $b+c=0$. (Hall & Knight Elementary Algebra, page 216).

(2) A telegraph has 5 arms and each arm has 4 distinct positions, including the position of rest. Find the total number of signals that can be made? (Hall & Knight's Elementary Algebra, page 310.)

(3) Suppose a flag-staff whose height is 48 feet and whose end diameters are 18 inches and 3 inches respectively, is in 3 sections of equal length; what is the cost of painting each section at 5 cents per square foot? (Eaton's Practical Mathematics, page 66.)

$$(1) \quad \frac{z+y}{x+z} = \frac{a(z+y)}{a(x+z)}$$

If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$ then each of these fractions = $\frac{a+c+e}{b+d+f}$ (See par. 294.)

Therefore each of the given fractions = $\frac{bx-ay+cx-az+az+ay}{cy-az+by-ax+ax+az} = \frac{bx+cx}{by+cy} = \frac{(b+c)x}{(b+c)y} = \frac{x}{y}$ unless $b+c=0$.

(2) Each arm can be placed in 4 different positions, 2 arms can be placed in 4^2 positions, 3 arms in 4^3 , 4 arms in 4^4 , and 5 arms in 4^5 positions. Each of these positions will form a signal, except the one in which they are all at rest.

$\therefore$ Number of signals = $4^5 - 1 = 1024 - 1 = 1023$.

(3) The lowest section costs more than the middle one, and the middle one more than the highest section. \$3.25 is the cost of the lowest section. The text gives the answer of but one section.

M.—Kindly explain the meaning of the phrases "Old Style" and "New Style" when placed after dates.

The civil year, according to the calendar of Julius Caesar ("Old Style"), consists of $365\frac{1}{4}$ days, the quarter days being added to make a complete day every fourth year. The mean solar year consists of 365 days, 5 hours, 48 minutes, 49 seconds. This is over 11 minutes shorter than the average civil year of 365 days, 6 hours. In other words, every Julian year is longer than it ought to be by 11 minutes, 11 seconds. Pope Gregory reformed the calendar in October, 1582, and ordered ten days to be struck off. When the British parliament adopted this "New Style" in 1751, the error amounted to eleven days, and accordingly eleven days were struck out of September, 1752, the third day of that month being called the fourteenth. So great was

the prejudice of the ignorant against this change that for some time after a popular clamor at elections was, "Give us back our eleven days!" In Russia the "Old Style" is still adhered to.

The plan adopted to keep the calendar "right," or nearly so, is to leave out three days in every four centuries. The years that complete each century, such as 1700, 1800, 1900, 2000, are not all of them leap years. Only those divisible by 400 without a remainder are so called. Therefore the last of those named above is the only leap year. This accounts for the fact that 1904 is the first leap-year in eight years.

SCHOOL AND COLLEGE.

Mr. Henry F. Perkins, Ph. B., an experienced and successful teacher has been chosen principal of the Hartland, N. B., Superior School.

Nature work has been made a part of the regular programme of the Cornell Summer School, under the direction of Professor L. H. Bailey.

The summer school which meets in Charlottetown in July next, will have the advantage of hearing lectures from the professors in attendance at the Canadian Biological station on Prince Edward Island next summer.

Recently in the Halifax police court three parents were fined, with the alternative of spending a certain number of days in jail, for neglecting to send their children to school. To enforce the compulsory school law it is necessary to arouse parents to a sense of their duty, and an example of this kind will exert a wholesome influence.

The London Times says that as a result of Dr. G. R. Parkin's recent tour of South Africa, New Zealand and Australia, where he has been distributing the Rhodes scholarships, 75 students will be in residence at Oxford next year. The work of distribution will be practically completed in 1906, when the number of students will have been increased to 175, who will hail from the above countries and Canada, Germany and the United States.

The formal opening of the Macdonald Consolidated school building at Middleton, N. S., took place on Monday, February 1st, in the presence of a large assembly of people. Addresses were delivered by Hon. J. W. Langley, Dr. A. H. MacKay, T. B. Kidner, Esq., and others. In the evening grade ten of the school gave a literary and musical entertainment, the chief feature of which was the dramatic presentation of Scott's Lady of the Lake. The building is built of brick at a cost with equipment of \$20,000, and is convenient and well fitted up in every respect. The staff of teachers, of which Mr. G. B. McGill is principal, and the people of Middleton and surrounding country are to be congratulated on the completion of such a fine building.