

S. B. A.—(1) Hamblin Smith's Arith., page 146, Ex. I., 4.

In 8505 days there are 1417 weeks and three days over ;

Therefore the first number appeared on a Friday.

$8505 \text{ working days} = \frac{8505 \times 7}{6} \text{ ordinary days} = 27 \text{ yrs.}$   
and 61 days nearly.

27 years and 61 days from Monday, June 18th, 1877, is Friday, April 19th, 1850.

Note—In making the calculation the leap years are to be taken into account.

(2) Hamblin Smith's Arith., page 146, Ex. I., 5.

The time between 9 hr. 13 min. A. M. on June 26, 1858, and midnight on Dec. 31, 1873, is 5667 d. 14 hr. 47 min.

Now 29 d. 12 hr. 47 m. 30 sec. is contained in 5667 d. 14 hr. 47 min. 191 times and 26 d. 19 hr. 34 min. 30 sec. over.

Therefore there were 191 full moons, and the last one occurred 26 d. 19 hr. 34 min. 30 sec. before 12 P. M. of Dec. 31, or at 4 hr. 25 min. 30 sec. A. M. of Dec. 4.

(3) Produce a given straight line AB to C, so that the rectangle contained by the sum and difference of AB and AC may be equal to a given square.

Let D be the side of the given square.

Draw BE = D at right angles to AB from the point B. With the centre A and the distance AE, describe a circle and let AB produced meet the circumference in C. Then the rectangle contained by the sum and difference of AB, AC

= difference of squares on AC, AB (II. B)

= " " " AE, AB,

= squares on BE = square on D.

(4) Shew that the sum of the squares on the diagonals of any quadrilateral is less than the sum of the squares on the four sides by four times the square on the line joining the middle points of the diagonal.

Let A B C D be a quadrilateral, and let O, P be the middle points of its diagonals. Join OP, BP, DP.

Then, by Ex. to II., 13, the sum of the squares on AB and BC = twice sum of squares on BP, CP ; and sum of squares on CD, DA = twice sum of squares on DP, CP ;

Therefore sum of squares on the four sides is equal twice sum of the squares on BP, DP, with four times squares on CP. But sum of squares on BP, DP = twice sum squares on BO, OP (II., 13, Ex.)

Therefore sum of squares on the four sides = 4 times sum of squares on BO, OP, CP.

Also square on AC = 4 times square on CP (II., 2, Ex.)  
and " " BD = 4 " " BO (II., 2, Ex.)

Therefore sum of squares on the four sides = sum of squares on diagonals with four times square on OP.

## SCHOOL AND COLLEGE

Teachers may take notice that Labor Day, the first Monday in September, is a school holiday.

Hon. W. W. Stetson, Supt. of Education, Maine, has kindly consented, upon request, to take for his subject at the United Institute, in St. Stephen, "The Literary Qualifications of the Common School Teacher."

Few pupils failed to pass the official (N. B.) High School entrance examinations. This either speaks well for the efficiency of the schools or denotes easy papers, perhaps both.

Congratulations to Mr. Geo. J. Trueman, the popular and efficient principal of the St. Martins' Superior School, who entered into the bonds of matrimony during the vacation.

Mr. C. H. Acheson has been appointed to succeed Mr. R. B. Wallace, the late efficient principal of the Milford Superior School, who retires for rest and a change of occupation.

In St. Stephen Miss McIntosh, a graduate of the University, has been appointed High School assistant. Miss Phillips has resumed her duties, and Miss McKenzie has been appointed to succeed Miss Carter, who has been granted a six months' leave of absence.

St. John young ladies have again taken a prominent place at McGill College, Montreal. The results of the recent associate of arts examinations have been declared, and in the list of successful young ladies appear the names of four from the Victoria Girls' High School. They are Miss Lulu Z. Roderick, with 676 marks ; Miss L. Maude Kavanah, with 647 marks ; Miss Edna Waterbury Gilmour, 637 marks, and Miss Katie R. Lander, 588 marks. All are well to the head of the list.—*St. John Globe*.

A large and much interested audience listened to Dr. MacKay's lecture in the Truro Normal School at the closing in June. His references to the subject of education and early home training were exceedingly practical and forcible, and shewed how necessary it was that our people should be well grounded and rooted in the technical side of their callings and occupations, and that they should receive an education calculated to enable them to attain the highest success in these. We are fortunate in having a Superintendent of Education imbued with such sentiments. Such a man must eventually prove a blessing to the farmer, the mechanic and others in the more practical walks of life.—*Colchester Sun*.