5. Divide the number 60 into 2 parts, so that if five times one part be subtracted from five times the other the remainder may be 100.

6. Find the sum of an infinite number of terms of a geometrical series, whose common ratio is less than unity.

Sum the series 2, 6, 10, 14,......to 20 terms.

" " 1, $\frac{1}{3}$, $\frac{1}{9}$, $\frac{1}{27}$,......to 8 terms.

7. (1) Write down the co-efficient of x^n in the expansion of $(a + x)^n$.

(2) By what must it be multiplied to give the co-efficient of x^{n+1}?

(3) Find the middle term of $(1 + 3x)^8$.

Trigonometry.

1. Define *sine*, *cosine*, and *tangent* of an angle; and express the first of these ratios in terms of each of the other two.

2. Trace the changes in the tangent of an angle as the angle varies from $0°$ to $360°$.

3. Find the values of $\sin 30°$, $\cos 60°$, $\cot 45°$.

4. Prove:

(1) $\sin A (\tan A - 1) - \cos A (\cot A - 1) = \sec A - \csc A$.

(2) $\sin 3 A = 3 \sin A - 4 \sin^3 A$.

5. Prove geometrically that $\sin (A+B) = \sin A \cos B + \cos A \sin B$.

6. Shew that in any triangle

$$\cos A = \frac{b^2 + c^2 - a^2}{2 bc}.$$

7. If $a = 5780$, $c = 7639$, $B = 43° - 8'$, find A & C, having given

$\log 1859 = 3.26928$, $\log 13419 = 1.12772$

$L \cot 21° - 34' = 10.40312$, $L \tan 19° - 18' - 50'' = 9.54468$.

French.

Grammar and Voltaire, Charles XII.

1. Turn into English:

(1) Aimez-vous à patiner? Mais oui, je m'amuse parfois à tracer des figures.