drogen at 0°C and 760 min. pressure. It is used as a unit in composing bodies, as to weight. It was found that a centimetre was rather small, hence the introduction of this term; it is however seldom used. A type of the questions given under it would be: What is the weight in criths of four cubic metres of Oxygen? This will illustrate its use sufficiently. This *crith* is not noticed by any of the leading works on Chemistry, and it is very doubtful if the term will come into general use; no great need is felt for such a term. I have found it in only one work,* and it is scarcely noticed there.

MATHEMATICS.

Solutions to Problems in the March Number.

17. *(a)* Let m be the L.C.M. of a and b, and k *any* common multiple; then if there is any remainder after dividing m into k, this remainder being less than m, cannot contain a and b; but since this remainder is the difference between k and some multiple of m, it must contain all factors common to m and k, and, therefore, must contain a and b; hence there can be no remainder after dividing k by m, therefore. &c.

(b) In the process of finding the G.C.M. of a and b each pair of divisor and dividend contains precisely the same common factors as a and b: hence the G.C.M., which is the last divisor, contains all the factors common to a and b.

(c) Since the G. C. M. contains all the factors common to a and b, it is a common multiple of all these factors, and being itself one of these factors it must therefore be their *least* common multiple.

(d) It has been shown in *(a)* that the L.C.M. is a common measure of all the common multiples, and being itself one of them, it must therefore be their *greatest* common measure.

18. Let p, q, r, s, &c., be the n simple factors of the G.C.M. of a and b: then pq, qr, &c., pqr, prs, &c., $pqrs$, &c., are factors of a and b: hence all the factors of a and b will be found by taking the combinations of the n letters p, q, r, &c., one, two, three, &c., at a time, and the number of these combinations is 2^n-1.

19. Let $\dfrac{ax^2+bx+c}{1+x^2}=m$

then $(a-m)x^2+bx+c-m=0$

$$\therefore x=\frac{-b\pm\sqrt{b^2-4(a-m)(c-m)}}{2(a-m)}$$

Now, if x is real, the expression $b^2-4(a-m)(c-m)$ must be positive in order that its square root may be extracted. The factors of this expression are

$$[a+c+\sqrt{(a^2+b^2+c^2-2ac)}]-2m$$
$$\text{and, } 2m-[a+c-\sqrt{(a^2+b^2+c^2-2ac)}]$$

These must be both positive or both negative. If these factors were both negative, $2m$ would be greater than the first term of the first factor and at the same time less than the second term of the second, which is manifestly impossible. But both factors may be positive since this requires $2m$ to be *less* than the first and *greater* than the second, hence if x is real $2m$ must lie in value between

$$a+c+\sqrt{(a^2+b^2+c^2-2ac)}$$
$$\text{and } a+c-\sqrt{(a^2+b^2+c^2-2ac)}$$

20. Let xyz be in order of magnitude, x being the greatest, and let $x=z+m$, and $y=z+n$, so that m, n are positive quantities. Then, on substituting for x and y the expression becomes $a^2m^2+b^2n^2+(c^2-a^2-b^2)mn$.

Now $c^2-a^2-b^2=c^2-a^2-b^2-2ab+2ab=$