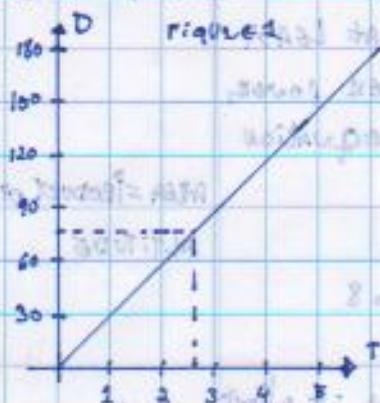


21. GRAPH OF A FUNCTIONAL RELATIONSHIP.



while the equation gives compact expression to the idea of dependence, the nature of a dependence is frequently made clearer by the use of a graph. The graph shows at a glance whether or not the quantities increase at the same rate or whether

one moves more rapidly than the other. The graph also indicates if the relationship is a simple or a complex one. For example, a straight line pictures a very simple relationship.

23. EXPONENTS

$$S = 16t^2 \quad t^2 = t \times t \quad \text{READ: "t SQUARED"}$$

The 2 or 3 is called an exponent and is written above and to the right of the base (t, in this special case) to indicate the number of times the base is to be used as factor. To find the value of S in $S = 16t^2$ when $t = 2$, we "square" 2, i.e., multiply 2 by 2 and then multiply the result by 16, thus: 16×2^2 , or $16 \times 4 = 64$.

(The result of using the same quantity as a factor two or more times is called a power of that quantity. For example, 8 is the third power of 2, since $8 = 2 \times 2 \times 2$, or 2^3 .) Returning to the equation $S = 16t^2$, having obtained the following pairs of values:

t	0	1	2	3
S	0	16	64	144



This graph is called a parabola and is the characteristic picture of the relationship between two variables in which one depends on the first power only while the other one is the second power.

20/10/14