f(x) = 2x **f(x) = x^2** **f(x) = 2^x** **f(x) = $\log_2 x$**

x is the input, *whatever* it is
f(x) is the output, a *function* of the input
= defines the *relationship* that turns the input into the output

Each of these has the same elements:

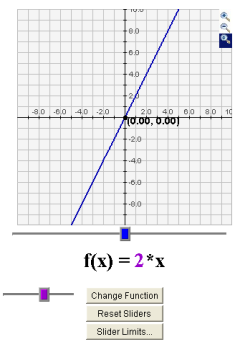
2
x
f(x)

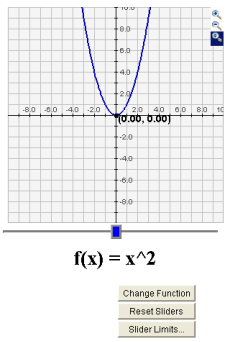
But they don't mean the same thing:

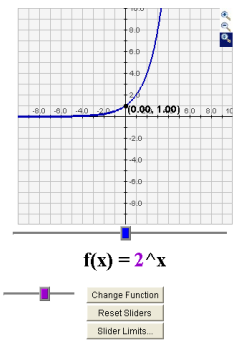
output = 2 times the input
output = the input squared
output = 2 raised to the power of the input
output = the power of 2 that gives you the input

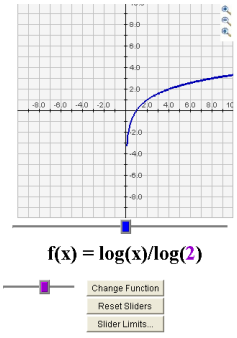
Here's what the graphs look like (from www.shodor.org/interactivate/activities/FunctionFlyer)

f(x) = 2x **f(x) = x^2** **f(x) = 2^x** **f(x) = $\log_2 x$**









Here's what the tables look like (see www.soesd.k12.or.us/files/input_output_excel.xls for Excel doc)

x	2x	x^2	2^x	$\log_2 x$
1	2	1	2	0
2	4	4	4	1
3	6	9	8	1.584962501
4	8	16	16	2
5	10	25	32	2.321928095
6	12	36	64	2.584962501
7	14	49	128	2.807354922
8	16	64	256	3
9	18	81	512	3.169925001
10	20	100	1024	3.321928095
11	22	121	2048	3.459431619
12	24	144	4096	3.584962501
13	26	169	8192	3.700439718
14	28	196	16384	3.807354922
15	30	225	32768	3.906890596
16	32	256	65536	4