Function Machines

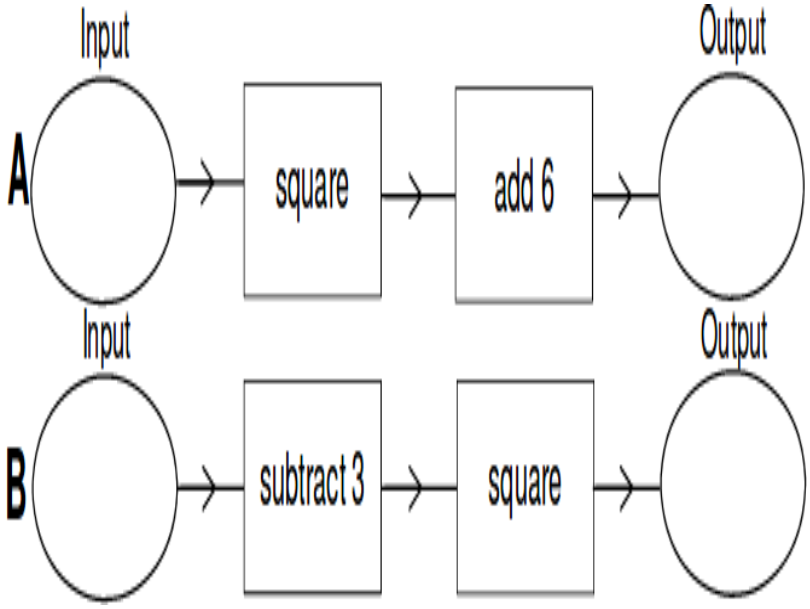
Just like a function, a function machine takes an argument computes a number.

$f(x) = 2x^2 - 3$

f takes an argument, squares it, multiplies the anser by 2 and subtracts 3.

If instead we want $f(3x + 2)$, the function f will take $3x + 2$, square it, multiply the answer by 2 and subtract 3.

A function machine acts in the same way and we can use this to solve problems. Consider the function machines below.



Suppose the inputs are the same for each machine A and B. We want the set of values of input for which the output of machine A is greater than the output of machine B.

Let the input to each machine be x.

The output from A is $x^2 + 6$

The output from B is $(x - 3)2$

Then we require $x^2 + 6 > (x - 3)^2$

$x^2 + 6 > x^2 - 6x + 9 \rightarrow 6x > -6x + 9 \rightarrow 12x > 9 \rightarrow x > \frac{9}{12} = \frac{3}{4}$.