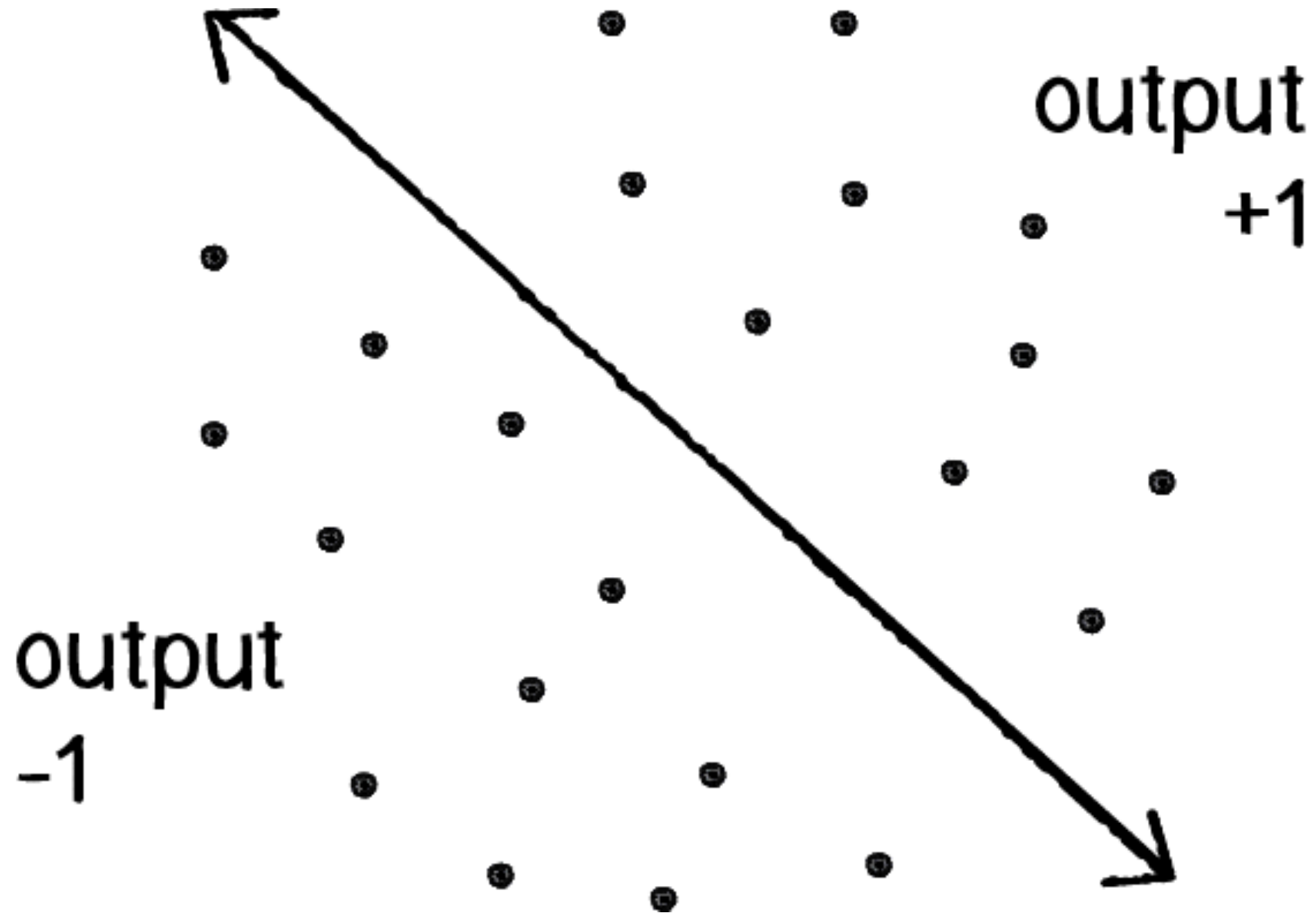
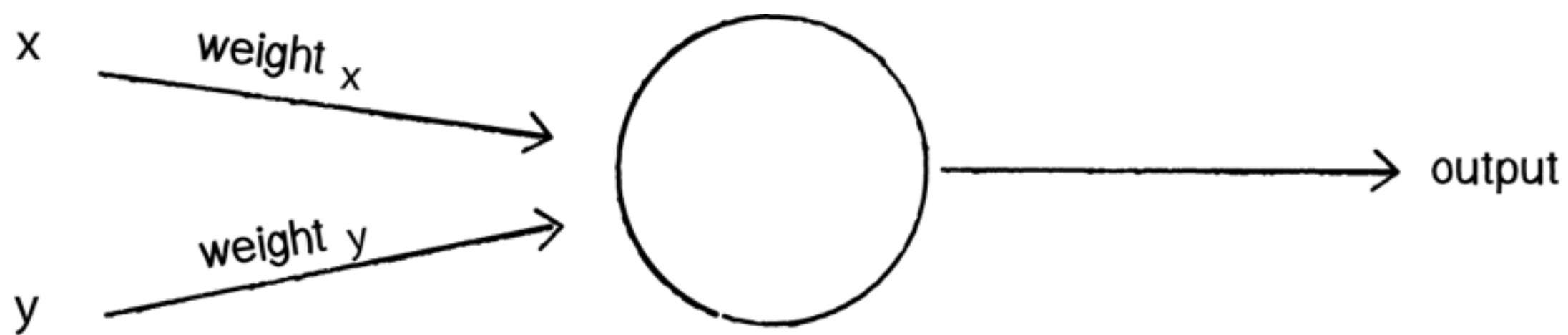


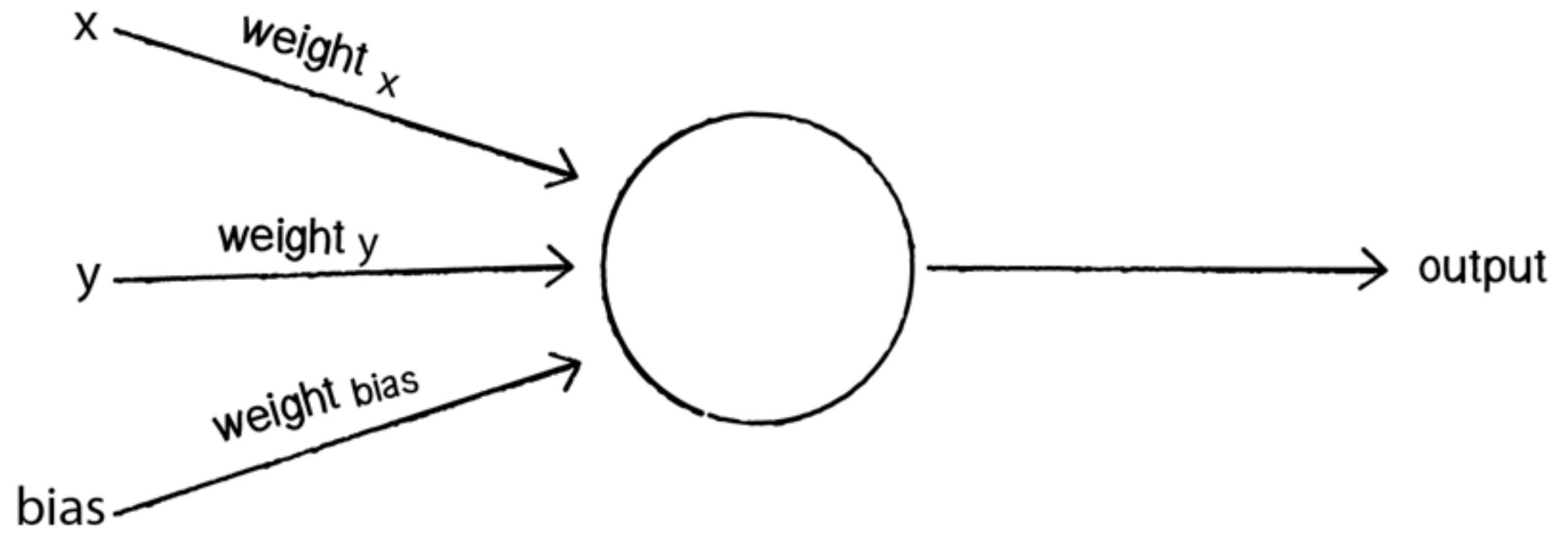
The Perceptron Algorithm:

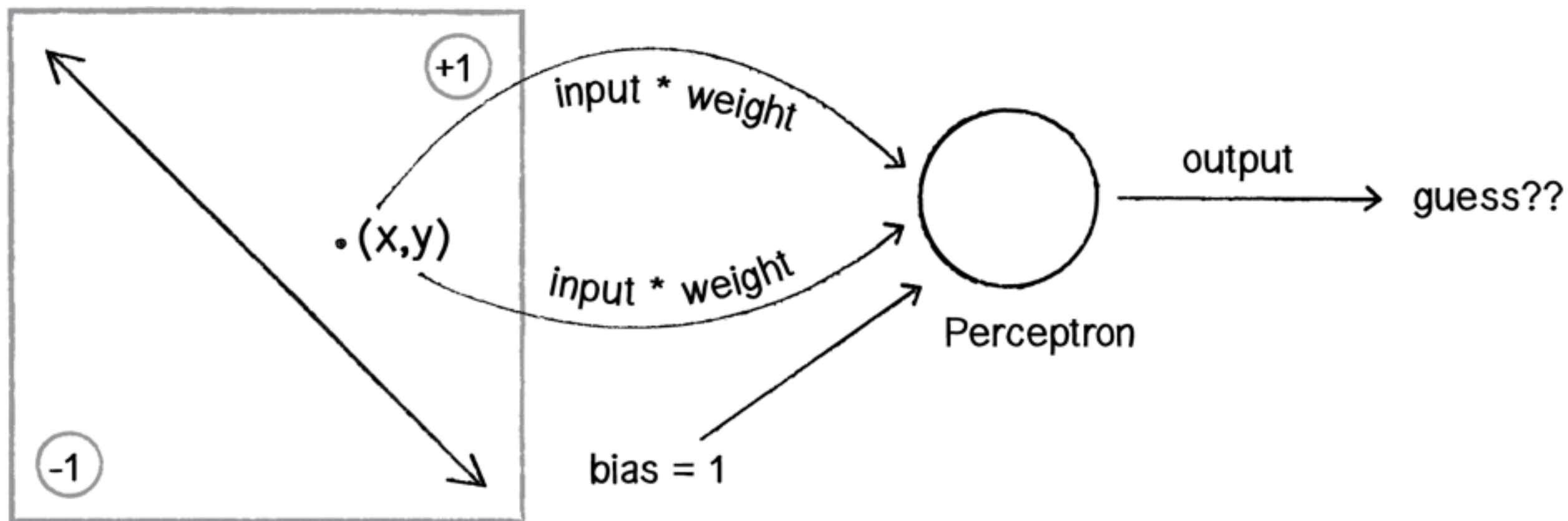
1. For every input, multiply that input by its weight.
2. Sum all of the weighted inputs.
3. Compute the output of the perceptron based on that sum passed through an activation function (the sign of the sum).

```
float[] inputs  = {12 , 4};  
float[] weights = {0.5,-1};
```









1. Provide the perceptron with inputs for which there is a known answer.
2. Ask the perceptron to guess an answer.
3. Compute the error. (Did it get the answer right or wrong?)
4. Adjust all the weights according to the error.
5. Return to Step 1 and repeat!

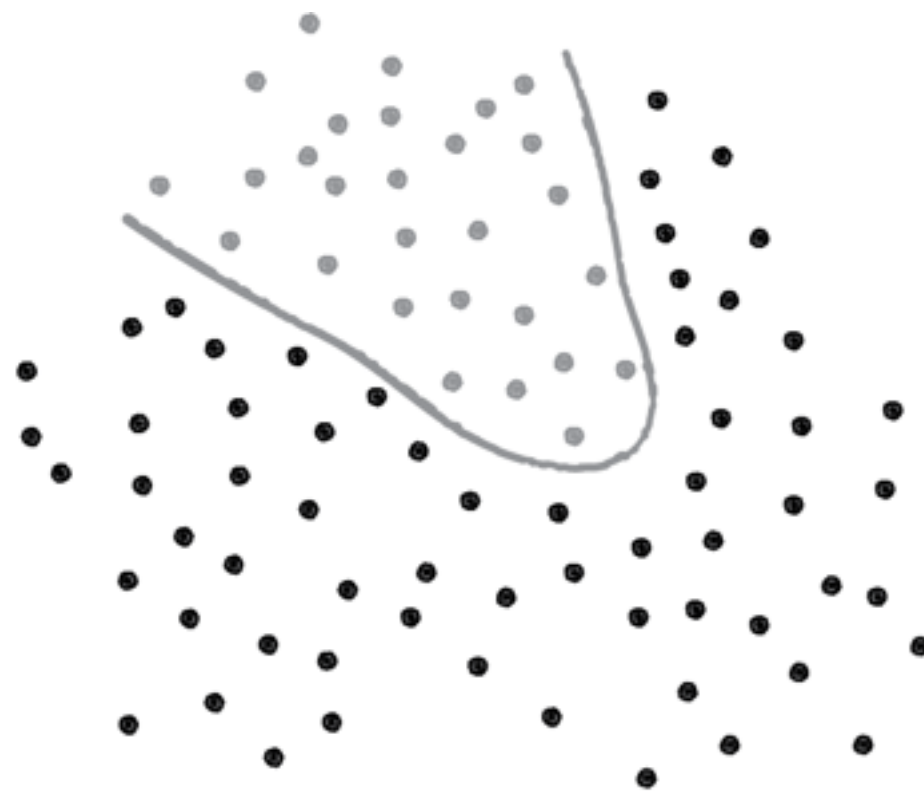
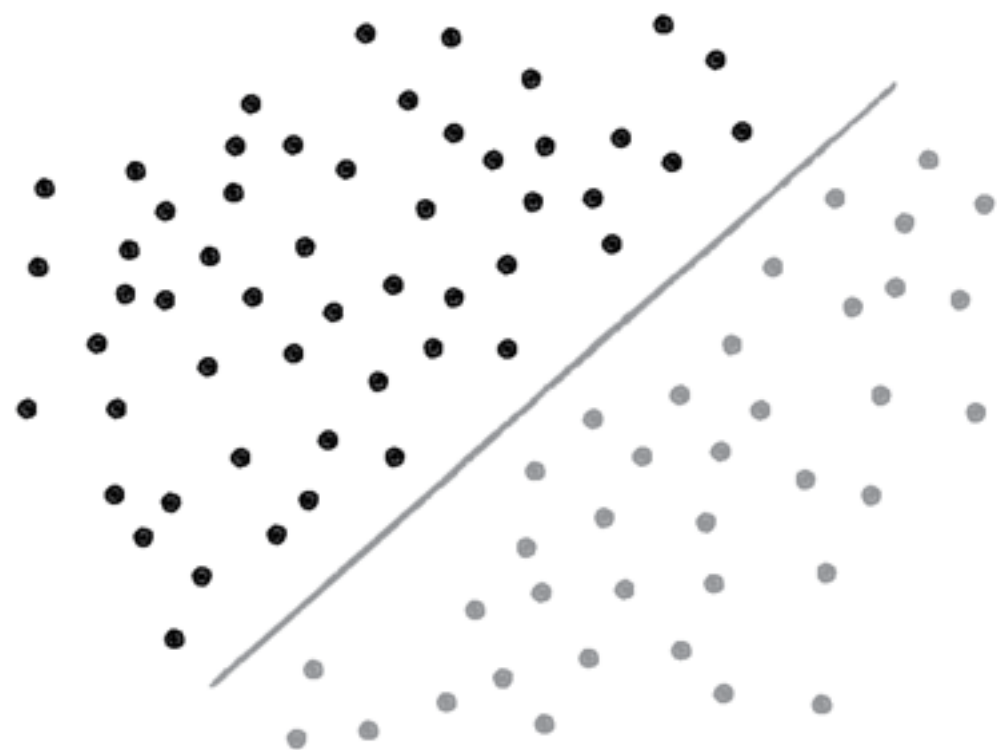
$$\text{ERROR} = \text{DESIRED OUTPUT} - \text{GUESS OUTPUT}$$

Desired	Guess	Error
-1	-1	0
-1	+1	-2
+1	-1	+2
+1	+1	0

$$\Delta \text{WEIGHT} = \text{ERROR} * \text{INPUT}$$

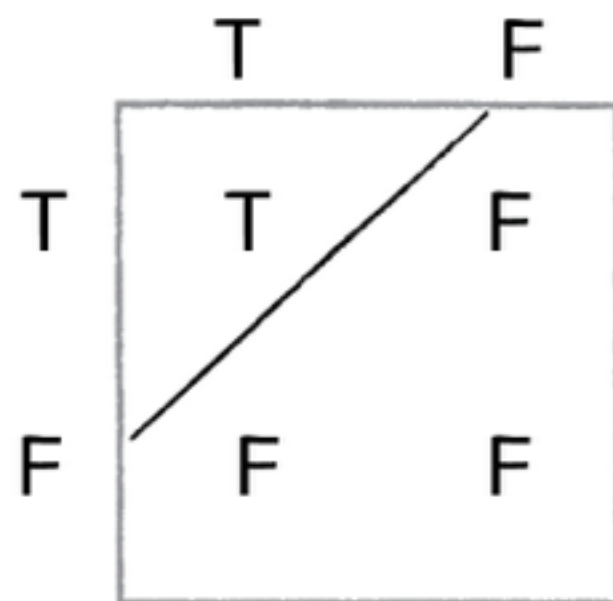
$$\text{NEW WEIGHT} = \text{WEIGHT} + \text{ERROR} * \text{INPUT}$$

*** LEARNING RATE**



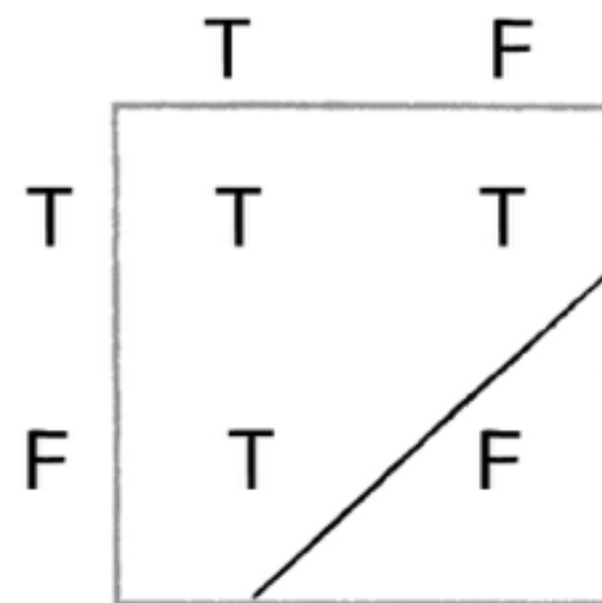
AND

	T	F
T	T	F
F	F	F

A 2x2 truth table for the AND operation. The columns are labeled T and F, and the rows are labeled T and F. The truth values are: (T, T) is T, (T, F) is F, (F, T) is F, and (F, F) is F. A diagonal line is drawn from the bottom-left cell (F, T) to the top-right cell (T, F).

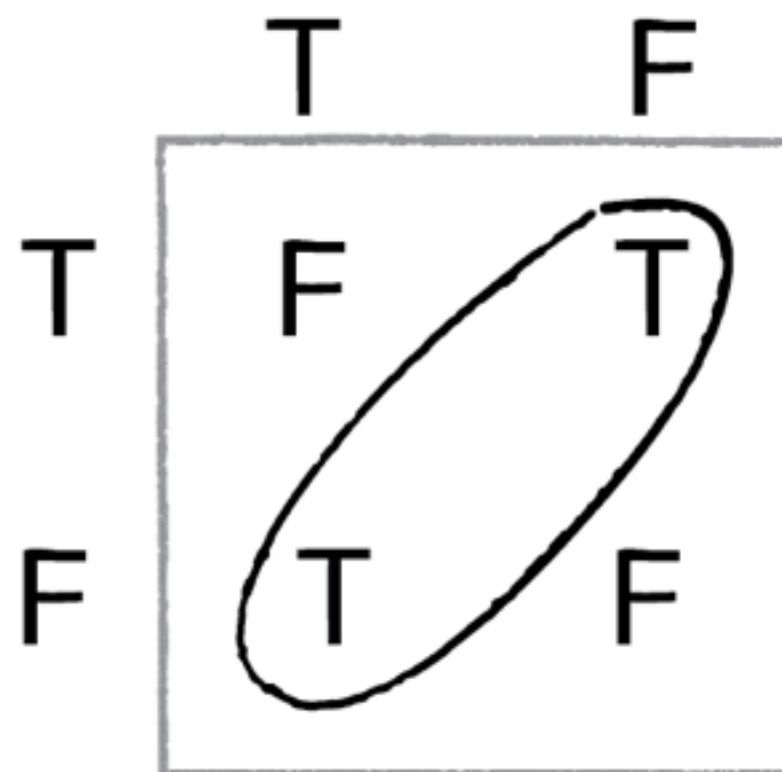
OR

	T	F
T	T	T
F	T	F

A 2x2 truth table for the OR operation. The columns are labeled T and F, and the rows are labeled T and F. The truth values are: (T, T) is T, (T, F) is T, (F, T) is T, and (F, F) is F. A diagonal line is drawn from the bottom-left cell (F, T) to the top-right cell (T, F).

XOR

	T	F
T	F	T
F	T	F

A 2x2 truth table for the XOR operation. The columns are labeled T and F, and the rows are labeled T and F. The truth values are: (T, T) is F, (T, F) is T, (F, T) is T, and (F, F) is F. An oval is drawn around the two cells where the result is T: (T, F) and (F, T).

