



Now we pass both groups through the sieve; note that both sieves are *the same*; they just behave differently depending on which group is passing through.  
 Let test+ = a positive mammography.

Finally, to find the probability that a positive test *actually means cancer*, we look at those who passed through the sieve *with cancer*, and divide by all who received a positive test, cancer or not.

$$\frac{p(\text{test+} \mid \text{cancer})}{p(\text{test+} \mid \text{cancer}) + p(\text{test+} \mid \sim\text{cancer})} = \frac{1\% * 80\%}{(1\% * 80\%) + (99\% * 9.6\%)} = 7.8\% = p(\text{cancer} \mid \text{test+})$$