

False Positive Paradox

Mammography data for women age 50-70 in the UK:

- 1% of women **have** breast cancer and 99% of women **do not have** breast cancer
- Of women **with** breast cancer, 85% will test **positive** (true positive) and 15% of women will test **negative** (false negative)
- Of women **without** breast cancer, 10% of women will test **positive** (false positive) and 90% of women will test **negative** (true negative)

Consider 1000 women age 50-70 who have been given mammograms. Round your answers to the nearest woman.

1. How many women **have** breast cancer?

(a) How many of these women will test **positive**?

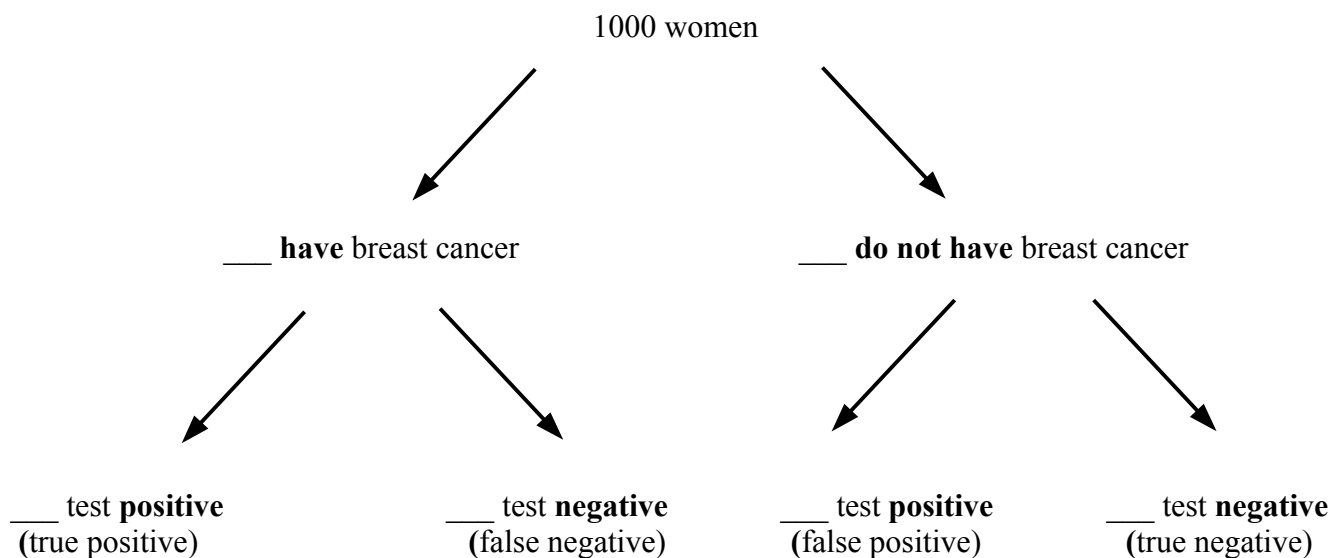
(b) How many of these women will test **negative**?

2. How many women **do not** have breast cancer?

(a) How many of these women will test **positive**?

(b) How many of these women will test **negative**?

3. Fill in the following tree representation of the data:



4. How many women overall test positive for breast cancer?

5. What percent of women who test positive for breast cancer actually have breast cancer?

6. Is your answer to #5 surprising? Can you explain this result?