

7/4/2017

Let $g = \#$ BABY GIRLS IN THE HOSPITAL ON JAN 2

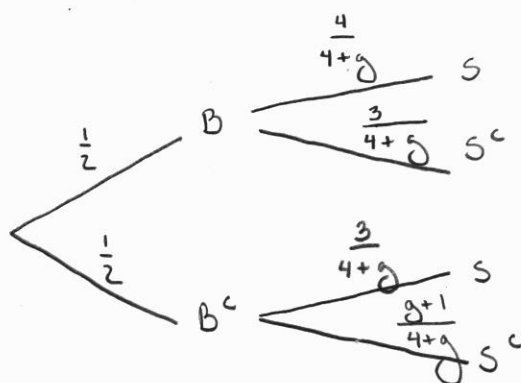
Let $B =$ EVENT THAT BABY BOY IS BORN ON JAN 2

$B^c =$ EVENT THAT BABY GIRL IS BORN ON JAN 2

$S =$ EVENT THAT BABY BOY IS SELECTED ON JAN 3

$S^c =$ EVENT THAT BABY GIRL IS SELECTED ON JAN 3

FIND $P(B|S)$



BAYE'S RULE

$$P(B|S) = \frac{P(B \cap S)}{P(S)} = \frac{P(B)P(S|B)}{P(S)}$$

$$= \frac{(\cancel{1/2}) \left(\frac{4}{4+g} \right)}{(\cancel{1/2}) \left(\frac{4}{4+g} \right) + (\cancel{1/2}) \left(\frac{3}{4+g} \right)} = \frac{\frac{4}{4+g}}{\frac{7}{4+g}}$$

$$= \boxed{\frac{4}{7} \approx 57.1429 \%}$$