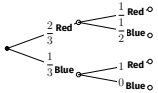
Build Tasks

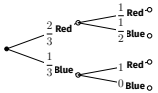
Use a without-replacement tree to find conditional probabilities, $P(B \mid A)$.

1.



Bag: 2 red, 1 blue (no replacement). Find $P(\text{2nd Red} \mid \text{1st Red})$.

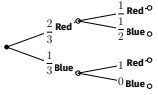
2.



Using the same tree, find $P(\text{2nd is Red} \mid \text{1st was Blue})$.

3. What does $P(B \mid A)$ mean, in words?

4.



Using the tree, find $P(\text{Red then Red})$ by multiplying along the branches.

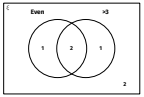
Build Tasks

Test independence by comparing $P(B)$ with $P(B \mid A)$.

5. $P(B) = 0.4$ and $P(B \mid A) = 0.4$. Are A and B independent?

6. $P(B) = 0.4$ but $P(B \mid A) = 0.7$. Are A and B independent? Explain.

7.



Die: $A =$ even, $B => 3$. Using the overlap, independent?

8. Why does comparing $P(B)$ to $P(B \mid A)$ test for independence?