



The Starburst Grab Bag



Rules of the game. The player chooses one Starburst from the bag and records the result, and then chooses their second Starburst (without replacement) and records the result. **The player wins if the two Starbursts are matching in color.** \rightarrow **dependent events**

1. Play the game 10 times as a whole class. Record the results.

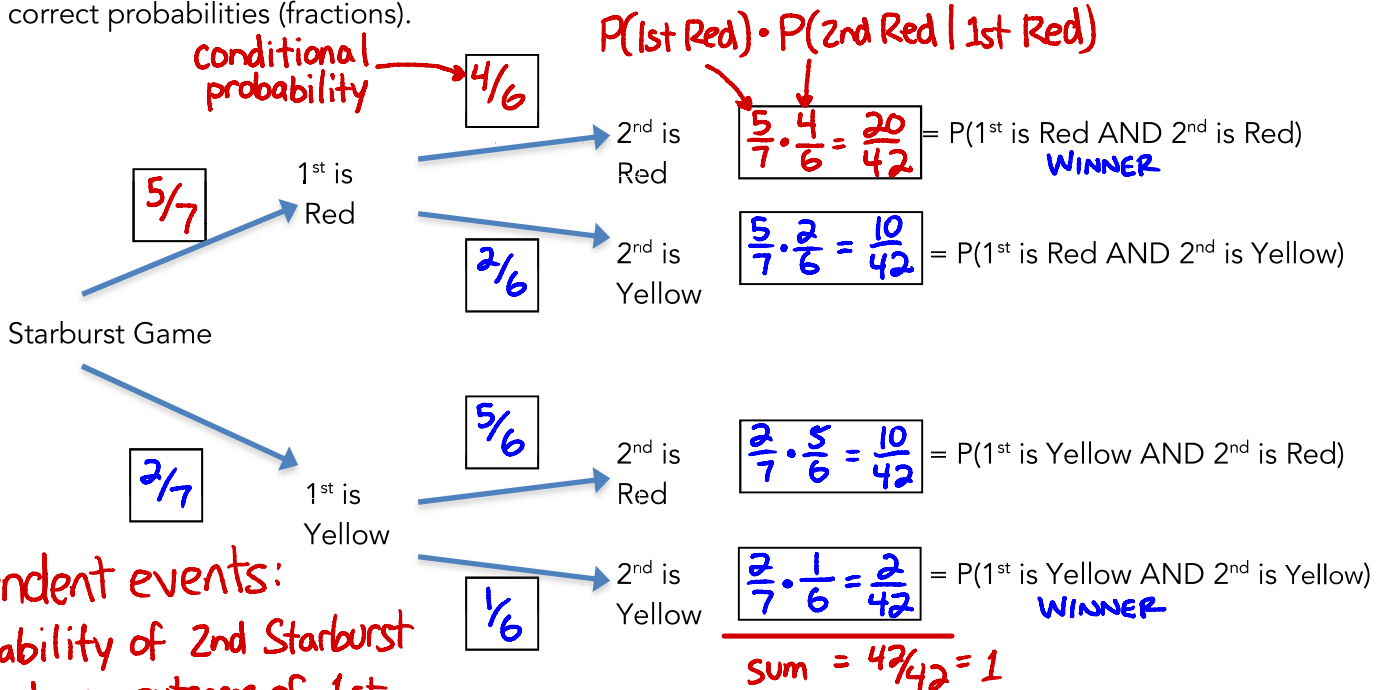
1st Starburst	R	R	Y	R	R	R	R	Y	R	Y
2nd Starburst	Y	R	R	Y	R	Y	R	R	R	R
Winner?	NO	YES	NO	NO	YES	NO	YES	NO	YES	NO

Based on these 10 games, what is the probability of winning this game? $\frac{4}{10}$

2. What information would you need to know to calculate the theoretical probability of winning?

How many of each color in the bag **5 Red, 2 Yellow**

3. Let's try to use a Tree Diagram to calculate the theoretical probability. Fill in the blank boxes with the correct probabilities (fractions).



Dependent events:
probability of 2nd Starburst depends on outcome of 1st.

4. Find the theoretical probability of winning the game. $\frac{20}{42} + \frac{2}{42} = \frac{22}{42} = 0.52$

5. What is the probability that the 1st Starburst was Red, given that the person won the game?

$$P(1^{st} \text{ Red} | \text{winner}) = \frac{20/42}{22/42} = 0.91$$

$$= \frac{P(\text{red winner})}{P(\text{winner})}$$