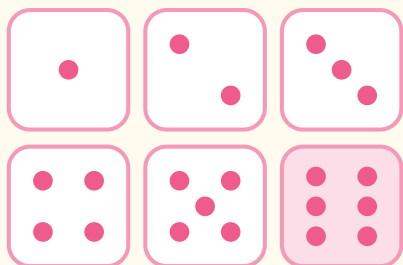


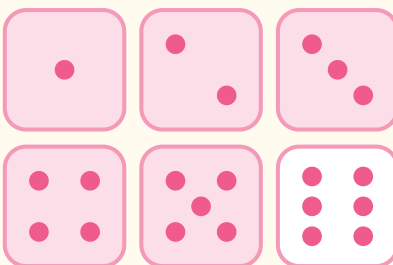
# Probability: add or multiply



**One event**

$$P(6) = 1 \text{ of } 6$$

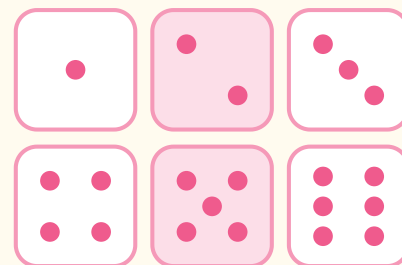
favorable over total



**Not that one**

$$1 - 1/6 = 5 \text{ of } 6$$

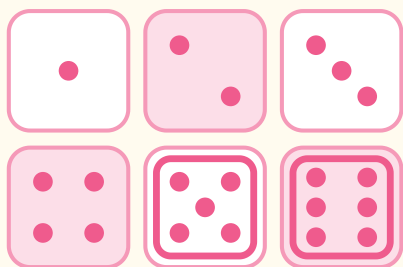
the rest of the faces



**Either — or**

$$1/6 + 1/6 = 2 \text{ of } 6$$

no face is in both



**...but they overlap**

$$3 + 2 - 1 = 4 \text{ of } 6$$

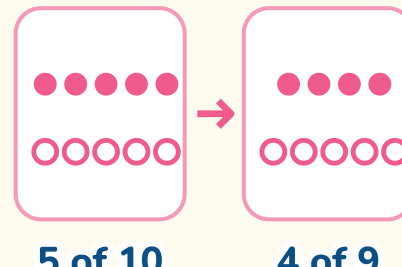
the 6 is in both — count it  
once



**Both — and**

$$1/2 \times 1/2 = 1 \text{ of } 4$$

two coins, four results



**5 of 10**

**4 of 9**

**Without replacing**

$$5/10 \times 4/9 = 2/9$$

one red gone, one ball fewer

**“Or” adds, “and” multiplies.** Count the faces if you are unsure — every rule here is a count of outcomes over the total, and a probability above 1 means something was counted twice.