

Addition Rule - Notes

Events that cannot both occur together

- Are these events mutually exclusive ~~or inclusive~~?
 - Event A: randomly selecting a junior Event B: randomly selecting a senior Yes
 - Event A: randomly selecting a doctor Event B: randomly selecting a female No
 - Event A: A Event B: A' Yes
- Each teacher cast one vote for the teacher of the year. Of the teachers 25% voted for Goodwin, 20% for Kline, and 55% for Alonzo. If a voting teacher is selected at random, what is the probability that they voted for Kline or Alonzo?
- A drink company applies one label to each bottle cap: "free drink," "free meal," or try again." A bottle cap has a $\frac{1}{10}$ probability of being labeled "free drink" and a $\frac{1}{25}$ probability of being labeled "free meal." What is the probability that a bottle cap is labeled "free drink" or "free meal?" Mut. Excl. $\frac{1}{10} + \frac{1}{25} = .14$
- Find the probability of rolling a die and getting a 5 or an odd number. $\frac{1}{6} + \frac{3}{6} - \frac{1}{6} = \frac{1}{2}$
- A poll showed that 61% of Americans say they believe that life exists elsewhere in the galaxy. What is the probability of randomly selecting someone NOT having that belief? .39
- The table below shows the number of passengers that survived or died during the Titanic catastrophe.

	Men	Women	Boys	Girls	Total
Survived	332	318	29	27	706
Died	1360	104	35	18	1517
Total	1692	422	64	45	2223

- Find the probability of selecting a man.
 - Find the probability of selecting a passenger who survived.
 - Find the probability of selecting a man or woman. .951
 - Find the probability of selecting a woman or someone who survived. .364
 - Find the probability of selecting a boy or someone who died.
 - Find the probability of selecting a man or someone who died.
- A group of juniors and seniors were polled to find out how many were planning to major in a scientific study in college. 210 Juniors and 200 Seniors voted no. Find each of the probabilities if a student is selected at random.

	Yes	No	Total
Junior	150	210	360
Senior	112	200	312
Total	262	410	672

- $P(\text{Junior}) = \frac{360}{672} = .536$
 - $P(\text{Yes}) = \frac{262}{672}$
 - $P(\text{Senior or Yes}) = \frac{312}{672} + \frac{262}{672} - \frac{112}{672} = \frac{462}{672} = .688$
 - $P(\text{Junior or No}) = \frac{560}{672} = .833$
 - $P(\text{not Senior}) = \frac{560}{672} = .833$
- Of 3510 drivers surveyed, 1950 were male and 103 were color-blind. Only 6 of the color-blind drivers were female. What is the probability that a driver was male or was color-blind.