

Boys and sports

Out of 250 fourth-grade boys, 120 played baseball, 140 played soccer, and 50 played both. Find the probability that a boy chosen at random:

Played both sports $n/N = 50/250 = 1/5 = 0.2$

Only played baseball $(120 - 50)/250 = 70/250 = 7/25 = 0.28$

Did not play either sport $n/N = 40/250 = 4/25 = 0.16$

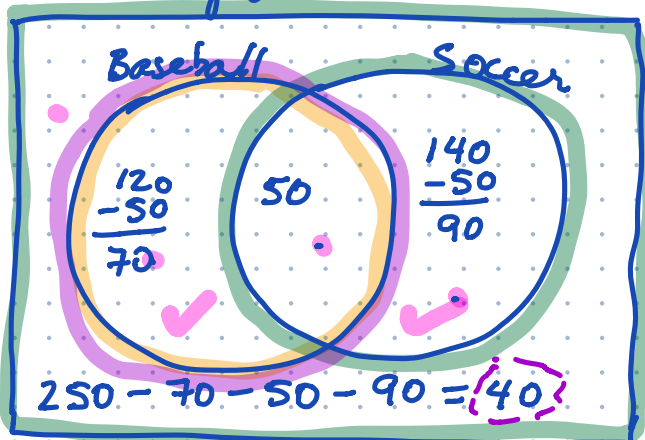
Played exactly one sport $(70 + 90)/250 = 0.64$

Played soccer given that he played baseball $P(S/B) = 50/(50+70) = 0.41\bar{6}$

Played baseball given that he did not play soccer $P(B/\bar{S}) = 70/(70+40) = 0.63$

Did not play soccer given that he did not play baseball $P(\bar{S}/\bar{B}) = 40/(40+90) = 0.307692307$

Venn Diagrams



	Baseball		
	Y	N	
Soccer	Y	50 140 - 50 = 90	140
	N	120 - 50 = 70 250 - 90 - 50 - 70 = 40	110
		120	130
			250

$$n(B \cap S) = 50 = |B \cap S|$$

$$n(S) = 140$$

$$n(B) = 120$$

$$n(U) = 250$$

