

Conditional Probability

Name Key

4. Pierced Ears

Gender	Yes	No	Total
Male	19	71	90
Female	84	4	88
Total	103	75	178

Find the following probabilities:

- $P(\text{pierced ears}) = 103/178$
- $P(\text{male}) = 90/178$
- $P(\text{male}|\text{pierced ears}) = 19/103$
- $P(\text{pierced ears}|\text{male}) = 19/90$

5. Baby's Hearing

Test Result	Loss	Normal
Loss	54	6
Normal	4	36

The above table gives information on a hearing device, the Handtronix-OtoScreener, which is used to test the hearing of newborns.

- Estimate the probability that this new device will show a hearing loss for a baby who actually has hearing loss. $54/58$
- Estimate the probability that this new device will show normal hearing for a baby who actually has normal hearing. $36/42$
- Estimate the chance that a baby with a hearing loss will pass the hearing test (test normal) using this device. $4/58$
- If the test shows that the baby has a hearing loss, what's the estimated probability that the baby really has a hearing loss? $54/60$

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6. If you select a student at random from the school being described, what is the probability that the student has ridden a merry-go-round or a roller coaster, given the information about that school? Make a table to illustrate each situation.
- In a particular school, 80% of the students have ridden a merry-go-round and 45% have ridden a roller coaster. Only 15% have done neither.
 - In another school, 30% of the students have ridden a merry-go-round but not a roller coaster. 45% have ridden a roller coaster but not a merry-go-round. Only 20% have done neither.

a)

Ride MGR	Ride RC		
	YES	NO	
YES	40	40	80
NO	5	15	20
	45	55	

b)

MGR Ride	Ride RC		
	YES	NO	
YES	5	30	35
NO	45	20	65
	50	50	