

Hypothesis Testing: Possible Outcomes for Hogwarts Mysteries!

For each cell of each table below, indicate whether you would have made a correct decision, a type 1 error, or a type 2 error. State what this would mean **for that specific research project**. You can work with your house on this assignment, provided each of you contribute EQUALLY. Simply copying answers from your housemates is cheating and could send you to Azkaban! Seriously, don't cheat.



BEWARE!

**The labels in the
tables can move.**

Pay attention!

Mystery



#1

Hermione is convinced that a magic potion could be developed that would convert muggles to wizards. She creates three different potions; Gryphon's Blood, Scorpion Sting, and Bat Wings Tonic. Sixty muggles are randomly assigned to one of the three potions. Two weeks after taking the potions, they are given a battery of tests to measure their magical powers. The mean score for each group is calculated to see if one potion is more effective than the others.

	Retain Ho	Reject Ho
Ho is true in reality		
Ho is false in reality		



Mystery

#2

Do male, female, or nonbinary wizards reach their full wizard potential earlier? Fifty wizards in each gender category are followed from 12 years of age until 30. The age at which they reach full strength was recorded, and the means are calculated for each gender category.

	Retain H_0	Reject H_0
H_0 is false in reality		
H_0 is true in reality		



Mystery

#3

Is there a relationship between the age of a child and how scary they perceive Hagrid to be? Five hundred muggle children are shown a life size poster of Hagrid. The researcher records each child's age and how scary they thought Hagrid was on a 1-10 scale (1 not scary – 10 extremely scary)

	Reject Ho	Retain Ho
Ho is true in reality		
Ho is false in reality		



Mystery

#4

All students at Hogwarts are allowed to bring one pet; an owl, cat, or toad. Does choice of pet depend on whether the student is pure blood or muggle born? Pet choice for 100 Muggle born and 100 Pure bloods is recorded to see if any relationship exists.

	Reject Ho	Retain Ho
Ho is false in reality		
Ho is true in reality		



Mystery

#5

Ron Weasley wants to play the quidditch game. But which position: chaser, beater, keeper, or seeker? He plays each position 15 times. The number of points earned each time in each position is recorded, and the mean number of points earned in each position is calculated.

	Retain H_0	Reject H_0
H_0 is true in reality		
H_0 is false in reality		



Mandrake Root cries can kill a person, especially if you pluck it from the nutrients it loves. But what does it love? Soil fertilized with frog warts, or soil fertilized with the expelled blood from troll bloodsuckers? To find out, 25 mandrakes are potted in the frog warts soil, and 25 are potted in the troll blood soil. After 1 week, they are violently pulled from their respective soils. The volume of the mandrakes' cries is recorded in decibels. The louder their cries, the more they loved their soil. Which group of mandrakes cried louder?

	Ho is false in reality	Ho is true in reality
Retain Ho		
Reject Ho		

Mystery

#7

Ron Weasley and Dobby are both pretty high stress individuals. Is one generally more stressed than the other? Is one more freaked out by a sudden stressor? To find out, Ron and Dobby are each exposed suddenly and unexpectedly to a dementor 20x over the course of one week. Skin conductance (SC) and heart rate (HR) are secretly recorded from a ring on their finger, both before and after the dementor appears. The change in HR and SC is calculated for each exposure to a dementor.

	Ho is false in reality	Ho is true in reality
Reject Ho		
Retain Ho		



Mystery

#8

What does it take to let Buckbeak fly him? Raw meat? Brutal force? Kindness & respect? To find out, 20 wizards give him raw meat, 20 use brutal force, and 20 use kindness and respect. Within each condition, whether Buckbeak let each wizard fly or not is recorded to see if there is any relationship between how he is treated and whether or not he lets himself be flown.

	Ho is true in reality	Ho is false in reality
Reject Ho		
Retain Ho		

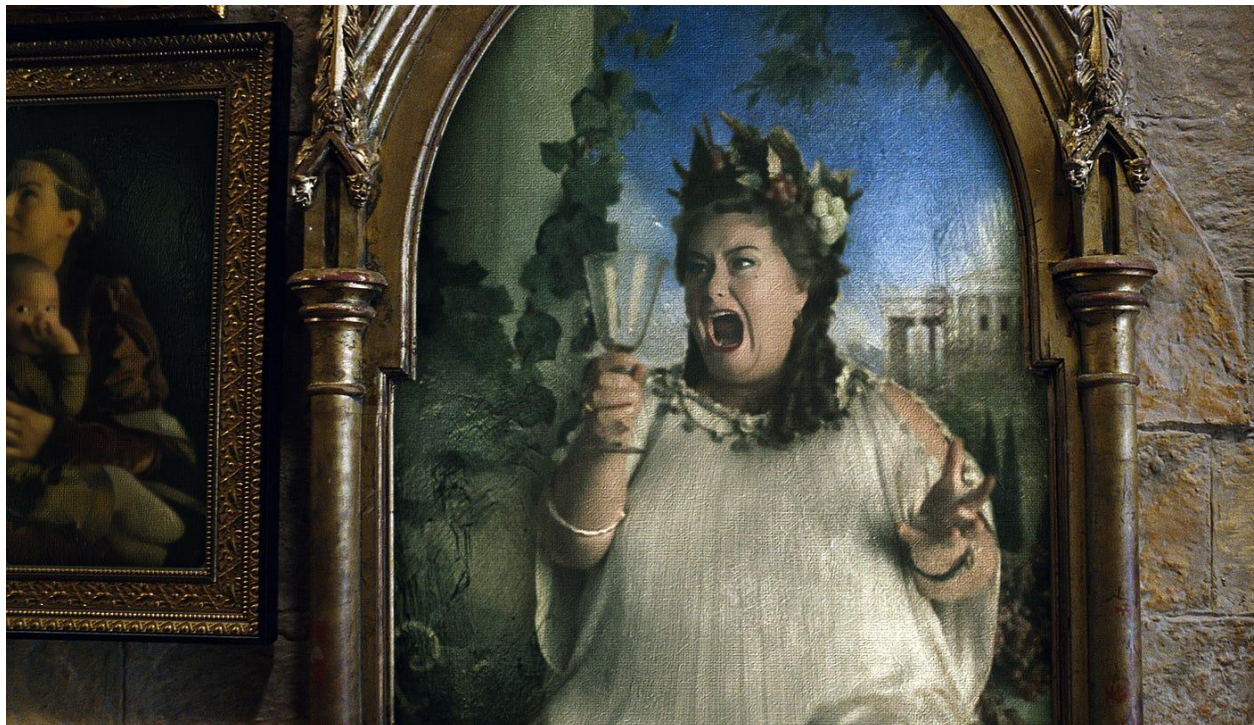


Mystery

#9

Who stole the fat lady? Did one of Hogwarts' houses conspire to commit the crime? To find out, every student in each house takes a polygraph test. Their peak skin conductance (SC) level is recorded. The assumption is that the higher the SC, the more likely they are lying. The mean SC for each house is then calculated.

	Retain H_0	Reject H_0
H_0 is true in reality		
H_0 is false in reality		



Mystery

#10

In the Triwizard Tournament game there are 6 paths to the snitches circle. The facilitators and hazards appear at different locations. Is one path easier than the other? The number of times each path produced a winner by the end of the semester was recorded.

	Retain Ho	Reject Ho
Ho is false in reality		
Ho is true in reality		

