Date Completed: _____
Mentor Initials: _____

Probability

Multiple Choice

1. A wallet containing 4 five-dollar bills, 8 ten-dollar bills, and 3 twenty-dollar bills is found and returned to its owner. The wallet's owner will reward the finder with 1 bill drawn randomly from the wallet. What is the probability that the bill drawn will be a twenty-dollar bill?

A) $\frac{1}{15}$

B) $\frac{1}{5}$

C) $\frac{1}{4}$

D) $\frac{1}{3}$

2. Before the championship quidditch match, Cheryl will bet on 1 student at random from a list of students to win the most valuable player award. The starting line ups have yet to be announced, and each player in the list plays only 1 position. The number of students who play a particular position and the house they belong to are given in the table below. Given that Cheryl picks a Seeker to win the award, what is the probability that the player Cheryl drafts will be from Slytherin?

Position	Hogwarts House		
	Gryffindor	Slytherin	Total
Chaser	6	7	13
Beater	5	3	8
Keeper	2	3	5
Seeker	2	2	4
Total	15	15	30

A) $\frac{1}{15}$

B) $\frac{2}{15}$

C) $\frac{1}{2}$

D) $\frac{7}{15}$

3.

	Yellow	Orange	Total
Square	4	6	10
Circle	5	10	15
Triangle	2	13	15
Total	11	29	40

The table shows the distribution of shape and color of various toys that are in a box. If a square is selected at random from the jar, what is the probability that the square is yellow?

A) 0.10
B) 0.36
C) 0.40
D) 0.60

4.

Age	Social Media Platform				
	Facebook	TikTok	Instagram	YouTube	Total
0-12	0	20	5	46	71
13-19	2	48	25	3	78
20-40	10	40	20	15	85
41+	50	1	2	30	83
Total	62	109	52	94	317

The table shows the results of a survey where the 317 human inhabitants of the Zootopia Zoo, sorted by age, were asked to name the social media platform they spent the most time on. If a human who spends the most time on Instagram is selected at random, what is the probability that they are aged 20+?

A) $\frac{20}{317}$
B) $\frac{4}{17}$
C) $\frac{5}{13}$
D) $\frac{11}{26}$

5. A bag contains r red, b blue, and w white buttons. If one of these buttons is selected at random, what is the probability of randomly selecting a button that is NOT blue?

A) $\frac{r+w}{b}$

B) $\frac{r+w-b}{r+b+w}$

C) $1-\frac{b}{r+w}$

D) $1-\frac{b}{r+b+w}$

Grid-In

6.

	Passed Knowledge Exam	Did Not Pass Knowledge Exam	Total
Took review course	46	9	55
Did not take review course	5	70	75
Total	51	79	130

The table above summarizes the results of 130 Harry Potter enthusiasts who took the Harry Potter Knowledge Exam. If one of the surveyed enthusiasts who passed the exam is chosen for an interview, what is the probability that the person chosen did not take the review course?

7. A bag contains 14 red gumballs, 17 yellow gumballs, and 5 green gumballs. How many additional red gumballs must be added to the 36 gumballs already in the bag so that the probability of randomly drawing a red gumball is $\frac{5}{7}$?

8.

Sample	Sample Size	Satisfaction Rating		
		minimum	maximum	mean
A	14	3.0	9.5	7.0
B	7	1.0	5.0	3.5

The table shows the minimum, maximum, and mean satisfaction ratings by various children on a scale of $1-10$ smiley faces. The sample sizes are also shown. If one of the clowns from the two samples is selected at random, what is the probability that the selected clown is from sample B?

9. A basketball team has 6 seniors and 5 juniors. The coach will randomly select 2 team members, one at a time, to represent the team at a school event. Given that the first student selected is a senior, what is the probability that the second student selected will be a junior?

10. In a 2017 survey, 150 marine biologists, 142 wildlife biologists, and 108 botanists completed a survey indicated their major professional activity. The results are summarized in the table below.

Type of Biologist	Major Professional Activity		Total
	Research	Teaching	
Marine	96	54	150
Wildlife	51	91	142
Botanist	74	34	108
Total	221	179	400

If a biologist whose major professional activity is research is selected at random, what is the probability that they will be a wildlife biologist?