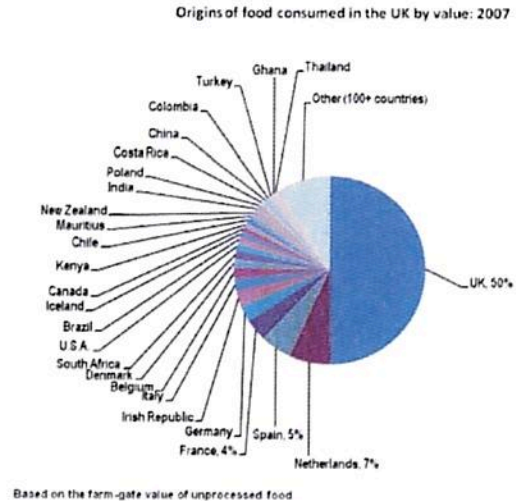


Instructions: Answer each question as thoroughly as possible. Round answers to 4 decimal places as needed. Exact answers are best when possible. Be sure to answer all parts of each question.

1. Explain what is wrong with the graph below. There are at least three problems.

too many slices
data labels overlap and are difficult to read
not all slices show %



2. Use the contingency table below to answer the probability questions that follow.

	Pizza Rolls	Chips and Dip	Cookies	Totals
Poker	10	3	12	25
Trivial Pursuit	8	14	7	29
Monopoly	14	17	7	38
Wii Bowling	12	7	4	23
Totals	44	41	30	115

- a. What is the probability that someone selected randomly from this sample likes cookies?

$$\frac{30}{115}$$

- b. What is the probability that someone selected randomly from this sample likes Wii bowling?

$$\frac{23}{115}$$

- c. What is the probability that someone selected randomly from this sample both likes cookies and Wii bowling?

$$\frac{4}{115}$$

- d. What is the probability that someone selected randomly from this sample likes cookies or like Wii bowling?

$$\frac{30 + 23 - 4}{115} = \frac{49}{115}$$

- e. What is the probability that someone selected randomly from this sample likes cookies given that they like Wii bowling?

$$\frac{4}{23}$$

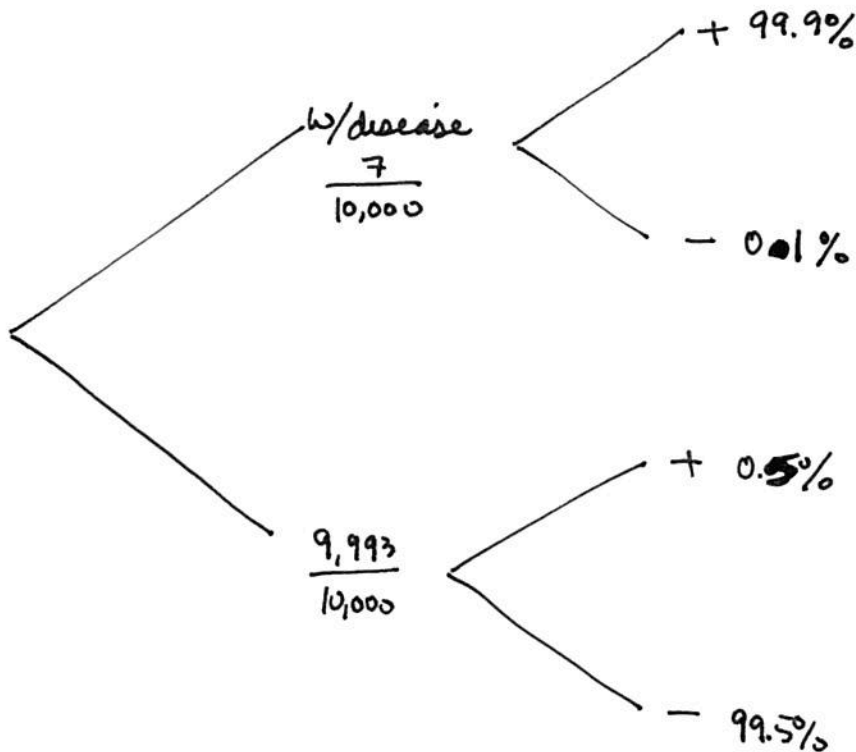
- f. Are snack preference and game preference independent events? Explain your reasoning. Show math to support your conclusion.

$$P(C|WB) = \frac{4}{23} \approx 0.1739\dots$$

$$P(C) = \frac{30}{115} \approx 0.2608\dots$$

These are not equal, so dependent.

3. A particular rare disease occurs in just 7 out of 10,000 people in population. A test for that disease correctly identifies those with the disease 99.9% of the time. For people without the disease, the test correctly identifies that they do not have the disease 99.5% of the time. If a patient tests positive for the disease, what is the probability that they actually have the disease?



$$\frac{\frac{7}{10,000} \times 0.999}{\frac{7}{10,000} \times 0.999 + \frac{9993}{10,000} \times 0.005} = 0.12277\dots$$

about 12% of the time