



## Ch. 2 Probability Exam Review Question Set



1. Match each term with its definition.

- |                             |                |               |
|-----------------------------|----------------|---------------|
| A. event                    | C. outcome     | E. Simulation |
| B. experimental probability | D. Probability | F. Trial      |

ANSWER	DEFINITION
	A possible result of an experiment.
	A probability experiment that models a real-life situation.
	One round of a probability experiment.
	A measure of the likelihood that an event will occur.
	A probability result determined using the outcomes of a simulation.

2. Match each term with its definition.

- |                             |                            |
|-----------------------------|----------------------------|
| G. raw data                 | J. Ratio                   |
| H. experimental probability | K. Statistic               |
| I. outcome                  | L. theoretical probability |

ANSWER	DEFINITION
	$\frac{\text{number of successful trials}}{\text{total number of trials}}$
	The number of successful outcomes as a fraction of the total number of possible outcomes.
	A comparison of two quantities measured in the same units.
	Unprocessed pieces of information.
	A value from the processing (calculation) of raw data.

3. Identify the type of probability in each question.

- A. experimental probability      B. theoretical probability

ANSWER	QUESTION
	You roll a six-sided die 30 times to determine how many times a 3 is rolled.
	You record students entering the school office to determine the probability of a girl entering the office.
	You check the answers of five multiple-choice tests to find the probability of the answer being "C."
	If you roll a six-sided die 60 times, the number 1 should turn up 10 times.
	Using only the 13 spade cards from a standard deck of playing cards, you determine that the chance of drawing an ace is about 7.7%.
	Based on a baseball player's record of striking out once every four times at bat, you calculate that there is a 25% chance that he will strike out this time.

**Recall:**

$$\text{Experimental probability} = \frac{\text{number of trials an event occurred}}{\text{number of trials}}$$

4. Jessica plays softball. In 25 at-bats she got 14 hits.

What is Jessica's *experimental probability* of getting a hit?

**Recall:**

$$\text{Theoretical probability} = \frac{\text{number of successful outcomes for the event}}{\text{overall number of possible outcomes}}$$

Suppose you roll a die. The **theoretical probability** that you roll a "5" is  $\frac{1}{6}$ , since the overall number of possible outcomes is 6 and the number of ways to successfully get a "5" is only 1.

5. **Multiple Choice.** If the probability of having rain tomorrow is 60%, what is the probability of not having rain tomorrow?

- A)  $\frac{1}{5}$       B)  $\frac{2}{5}$       C)  $\frac{3}{5}$       D)  $\frac{6}{10}$

6. A fair die is rolled. Determine the **theoretical probability** that an odd number is rolled. Write your answer as a fraction in lowest terms.
7. Two fair dice (a blue and red one) are rolled and the sum of the outcomes on the top of each die is observed. Calculate, in lowest terms:
- $P(\text{sum of } 5)$
  - $P(\text{sum of } 5 \text{ or sum of } 10)$
  - $P(\text{not getting a sum of } 5)$

		First Die					
		1	2	3	4	5	6
Second Die	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

Use the chart on the right to help you.

8. A stable has 15 horses available for trail rides. Of these horses, 6 are brown, 5 are white, and the rest are black. If Jasmine selects one horse at random, what is the probability that this is
- a black horse?
  - not a black horse?
  - either a black or a brown horse?
9. There are 100 students in grade 9, 125 in grade 10, 225 in grade 11, and 170 in grade 12. At a school assembly, every student at the assembly entered their name for a door prize. If selection is random, what is the probability that the prize will be won by
- a grade 9 student?
  - a grade 11 or 12 student?
  - a grade 12 student, if all grade 11 students are disqualified from winning?

**Recall:** In a probability experiment, if trials are repeated “again and again,” the experimental probability will tend to equal the theoretical probability. This is known as the ... **LAW OF LARGE NUMBERS.**

Note: when I say “again and again,” I really mean “thousands and thousands and thousands of trials!”

10. **Multiple Choice.** In a probability experiment, a fair coin is flipped (at random) several times. In the first several trials the outcomes occurred:  
 “Heads”, “Heads”, “Heads”, “Heads”, “Heads”  
 The next outcome will be:  
 A) “Heads”    B) “Tails”    C) impossible to predict since the event is random
11. **Multiple Choice.** If a fair coin is flipped 25000 times, by the Law of Large Numbers, one can expect the number of “Tails” to be *about*:  
 A) 25000    B) 12500    C) neither A) nor B) are correct

12. A die was rolled 100 times. The results are shown in the table.

Outcome	Frequency
1	3
2	22
3	6
4	36
5	16
6	17

- Determine the *experimental probability* of each outcome.
- What is the theoretical probability of each outcome?
- Could the die be “loaded” (or “unfair”)? Explain.
- What could you do to verify your conclusion in part c)?

13. **Find your Unit 2 Probability Test from your notebook.**

Go through each question, **AND** make sure you understand how to get the correct answer.

**FINAL ANSWERS**

- 1) C    2) H    3) A    4) 56%    5) B    Note:  $\frac{2}{5} = 40\%$     6)  $\frac{3}{6} = \frac{1}{2}$
- E    L    A    7) a)  $\frac{1}{9}$     b)  $\frac{7}{36}$     c)  $\frac{8}{9}$     8) a)  $\frac{4}{15}$     b)  $\frac{11}{15}$     c)  $\frac{2}{3}$     9a)  $\frac{5}{31}$     b)  $\frac{395}{620} = \frac{79}{124}$     c)  $\frac{34}{79}$
- F    J    A    10) C    11) B    12) a)  $\frac{3}{100}; \frac{11}{50}; \frac{3}{50}; \frac{9}{25}; \frac{4}{25}; \frac{17}{100}$     b)  $\frac{1}{6}$  for every outcome.
- D    G    B    12 c) Possibly. The numbers 2 and 4 were rolled almost 60% of the time.
- B    K    B    MORE ANALYSIS IS REQUIRED. See part d).
- A
- 12 d) Based on the Law of Large Numbers, conduct thousands and thousands and thousands of trials to see if the experimental probability remains different from the theoretical probability; if it does, then it is loaded or unfair. In theory, if the die is rolled thousands of times, each outcome will occur equally as each other outcome.