

AP Statistics · Probability and Random Variables · Quiz

Common Core AP Statistics Unit 2 (2026-27) · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This ap statistics probability quiz asks 10 multiple-choice questions on probability and random variables, and each answer comes with a short explanation.

This quiz has 10 multiple-choice questions on two-way tables, probability rules, independence, simulation, and the mean and standard deviation of a random variable. Choose the single best answer, and read each explanation to see why the other choices fail.

AP StatisticsCommon Core: AP Statistics Unit 2 (2026-27)

Questions

Question 1

A club of 100 students is classified by class and favorite food. What is the probability that a randomly chosen senior prefers pizza?

Class	Pizza	Tacos	Total
Junior	30	20	50
Senior	18	32	50
Total	48	52	100

Students by class and favorite food.

- A. 0.18
- B. 0.375
- C. 0.48
- D. 0.36

Question 2

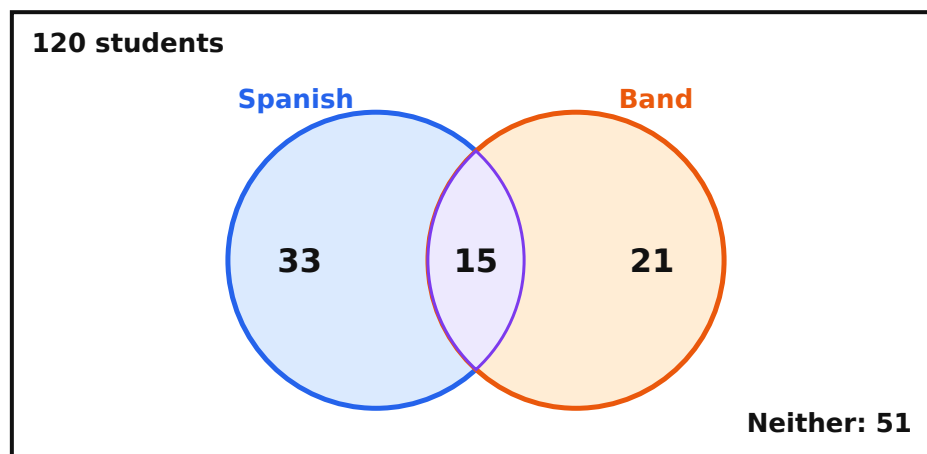
The probability that it rains tomorrow is 0.35. What is the probability that it does not rain?

- A. 0.35
- B. 1.35

- C. 0.65
- D. 0.45

Question 3

Of 120 students, 33 take only Spanish, 15 take both, 21 are in band only, and 51 do neither. What is the probability a student takes Spanish or is in band?



Counts in each region.

- A. 0.700
- B. 0.575
- C. 0.125
- D. 0.450

Question 4

A die is rolled once. Event A is rolling an even number and event B is rolling a number greater than 4. Are A and B mutually exclusive?

- A. Yes, because $P(A) + P(B)$ is less than 1
- B. Yes, because the die is rolled only once
- C. No, because $P(A)$ is not equal to $P(B)$
- D. No, because rolling a 6 is in both events

Question 5

For events A and B, $P(A) = 0.4$, $P(B) = 0.5$ and $P(A \text{ and } B) = 0.2$. Which statement is correct?

- A. Not independent, since the events can occur together
- B. Independent, since $0.4 \times 0.5 = 0.2$
- C. Not independent, since $0.4 + 0.5 = 0.9$, not 0.2
- D. Independent, since the events are mutually exclusive

Question 6

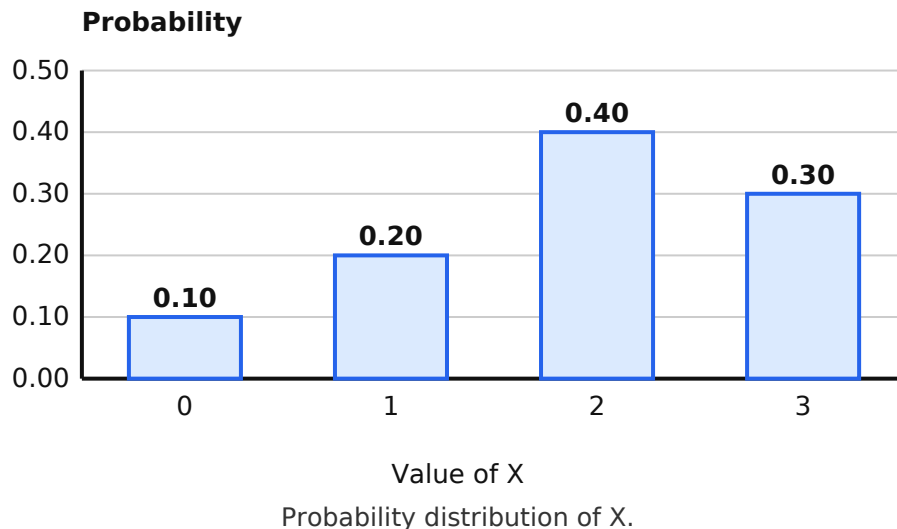
A basketball player makes 40% of her shots. Which assignment of random digits can simulate

one shot?

- A. Digits 0 to 3 are a make and 4 to 9 are a miss
- B. Digits 0 to 4 are a make and 5 to 9 are a miss
- C. Digit 4 is a make and all other digits are a miss
- D. Digits 0 to 3 are a make, 4 to 7 are a miss, ignore 8 and 9

Question 7

The probability histogram shows the number of goals X scored by a team in a game. What is the mean of X ?



- A. 1.9
- B. 1.5
- C. 2.0
- D. 0.25

Question 8

In a claw game the mean number of prizes per play is 1.75. Which interpretation is correct?

- A. On every play a player wins exactly 1.75 prizes
- B. The most likely result of a play is 1.75 prizes
- C. After 4 plays a player wins exactly 7 prizes
- D. Over many plays, the average number of prizes per play is close to 1.75

Question 9

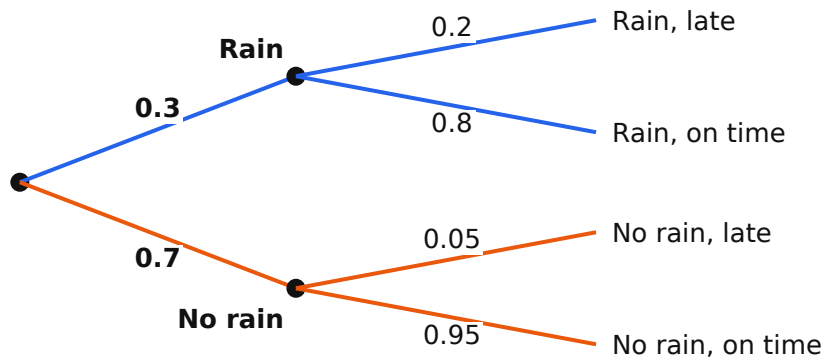
Two games both have a mean payout of . Game A pays or with equal probability. Game B pays or with equal probability. Which statement is true?

- A. Game A has the larger standard deviation
- B. The standard deviations are equal because the means are equal
- C. Game B has the larger standard deviation

D. The standard deviations cannot be compared

Question 10

The probability of rain is 0.3. The bus is late with probability 0.2 if it rains and 0.05 if it does not. What is the probability that the bus is late?



Tree for the bus.

- A. 0.060
- B. 0.250
- C. 0.095
- D. 0.035

Answer key

1. **D** – Given a senior, the denominator is the 50 seniors: $18/50 = 0.36$. Dividing by 100 gives the joint probability 0.18, and dividing by the pizza total 48 reverses the condition.
2. **C** – By the complement rule, $P(\text{not rain}) = 1 - 0.35 = 0.65$. A probability can never exceed 1, so 1.35 is impossible.
3. **B** – Add the three regions: $(33 + 15 + 21)/120 = 69/120 = 0.575$. Adding the totals 48 and 36 counts the 15 students in both twice.
4. **D** – $A = \{2, 4, 6\}$ and $B = \{5, 6\}$ share the outcome 6, so the events can occur together. A sum of probabilities below 1 says nothing about overlap.
5. **B** – Independence means $P(A \text{ and } B) = P(A)P(B)$, and $0.4 \times 0.5 = 0.2$. Events with $P(A \text{ and } B)$ greater than 0 are not mutually exclusive, but they can still be independent.
6. **A** – Four of the ten digits give 40%. Using 0 to 4 gives 50%, a single digit gives 10%, and ignoring 8 and 9 changes the make rate to 4 of 8.
7. **A** – The mean is $0(0.1) + 1(0.2) + 2(0.4) + 3(0.3) = 1.9$. The plain average 1.5 of the values ignores their probabilities, and 2 is only the most likely value.
8. **D** – The mean is a long-run average and need not be a possible value. It does not predict the result of any single play or a short run.
9. **A** – The payouts in A are 5 dollars from the mean (SD 5), and those in B are 1 dollar from the mean (SD 1). Equal means do not imply equal spread.
10. **C** – Add the two late branches: $0.3(0.2) + 0.7(0.05) = 0.06 + 0.035 = 0.095$. Taking only one branch gives 0.060 or 0.035, and adding 0.2 and 0.05 ignores the weights.

How does this quiz work?

Read each question, choose one answer among A, B, C and D, then check it: a short explanation appears after every answer. Your score out of 10 is shown at the end, and you can restart the quiz as often as you like.

What should you review before the quiz?

Reread the key facts of the lesson and the worked example. If a question is hard, go back to the matching part of the lesson, then try the quiz again. Write your work on scrap paper: most mistakes come from skipping a step, not from the idea itself.

Remember:

- Joint, marginal and conditional relative frequencies come from dividing by the grand total, a row or column total, or the given group.
- Complement rule: $P(\text{not } A) = 1 - P(A)$. Addition rule: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$.
- Conditional probability: $P(B|A) = P(A \text{ and } B)/P(A)$. Events are independent when $P(B|A)$

= $P(B)$.

- A simulation estimates a probability by repeating a random process many times with a clear digit assignment.
- A discrete random variable has mean sum of x times $P(x)$, and standard deviation the square root of the weighted squared deviations.

How to use this ap statistics probability quiz

Retake this ap statistics probability quiz until every answer is right, then move on to the worksheet and the test.

