

AP Statistics · Binomial and Normal Distributions · Test

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

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

This ap statistics binomial normal test checks binomial and normal distributions in 45 minutes, with 8 questions for a total of 20 points.

This free-response test covers binomial and normal distributions for AP Statistics. You may use a calculator with binomial and normal functions and a z-table. Show your setup in every part, state conclusions in context, and round probabilities to four decimal places. The test has 8 questions worth 20 points and takes about 45 minutes.

Test information

- **Grade:** AP Statistics
- **Chapter:** Binomial and Normal Distributions
- **Common Core:** AP Statistics Unit 2 (2026-27)
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 3 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 4 pts)

AP Statistics Binomial Normal Test: questions 1-5

Question 1: Binomial setting (2 points)

Aisha surveys 25 students chosen at random from a school of 2,400 students. In the school, 30% of students walk to school. Let X be the number of surveyed students who walk. Explain why X is a binomial random variable and identify its parameters. (2 points)

Question 2: Binomial probabilities (3 points)

A carnival game is won with probability 0.4 on each independent play. Let X be the number of wins in 10 plays. Find:

- $P(X=4)$ (1 point)
- $P(X \leq 2)$ (1 point)
- $P(X \geq 3)$ (1 point)

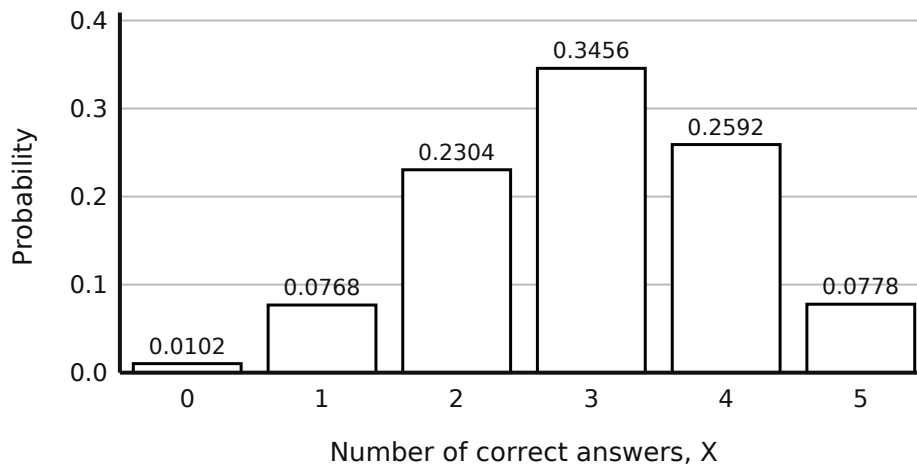
Question 3: Mean and spread (2 points)

About 20% of emails to a company are spam, independently. Let X be the number of spam emails among 300 received.

- Find the mean and standard deviation of X . (1 point)
- Find the interval within 2 standard deviations of the mean and interpret it. (1 point)

Question 4: Reading a binomial graph (2 points)

The graph shows the distribution of the number X of correct answers on a 5-question quiz, where each answer is correct with probability 0.6, independently.

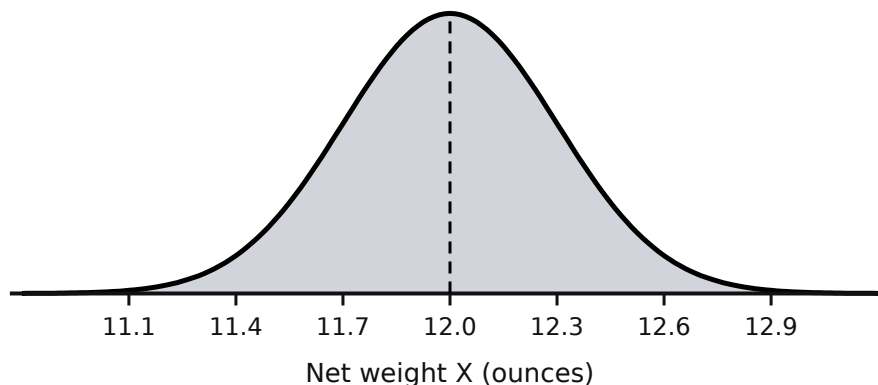


Distribution of X .

- What is the most likely value of X , and what is its probability? (1 point)
- Find $P(X \geq 4)$. (1 point)

Question 5: Normal probabilities (3 points)

The net weight of a bag of trail mix is approximately normal with mean 12.0 ounces and standard deviation 0.3 ounce.



Distribution of bag weights.

- Find the proportion of bags that weigh less than 11.5 ounces. (1 point)
- Find the proportion that weigh between 11.8 and 12.4 ounces. (2 points)

AP Statistics Binomial Normal Test: questions 6-8

Question 6: Percentile cutoff (2 points)

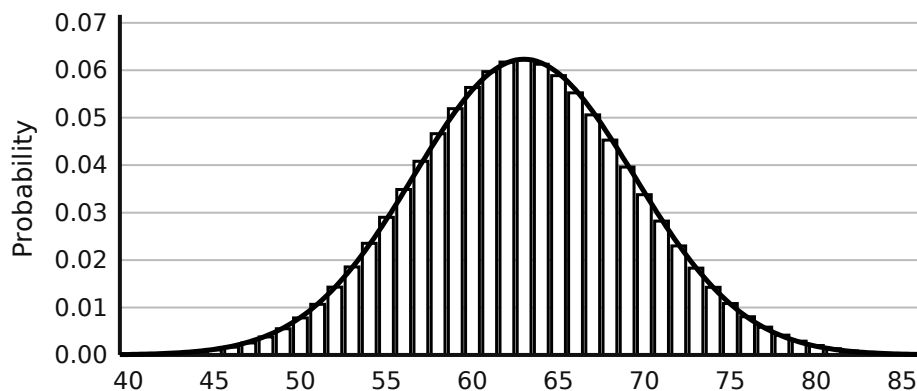
Reaction times of drivers are approximately normal with mean 250 milliseconds and standard deviation 40 milliseconds. A researcher wants a cutoff so that only the slowest 5% of drivers are above it. Find the cutoff. (2 points)

Question 7: Comparing z-scores (2 points)

On the reading test, Noah scored 68 (class mean 60, standard deviation 5). On the science test, Noah scored 590 (class mean 520, standard deviation 50). On which test did Noah do better relative to his classmates? Justify. (2 points)

Question 8: Normal approximation (4 points)

A coffee shop finds that 35% of customers order through its app, independently. On a day with 180 customers, let X be the number who order through the app. The graph shows the distribution of X with a normal curve.



Number of customers who use the app, X

Distribution of X with a normal curve.

- Verify that a normal approximation is appropriate. (1 point)
- Find the mean and standard deviation of X . (1 point)
- Use the normal model to approximate $P(X \geq 72)$. (1 point)
- Is it unusual for 72 or more customers to use the app? Explain. (1 point)

How to use this ap statistics binomial normal test

Take this ap statistics binomial normal test without notes, then grade it with the test answer key out of 20 points.

