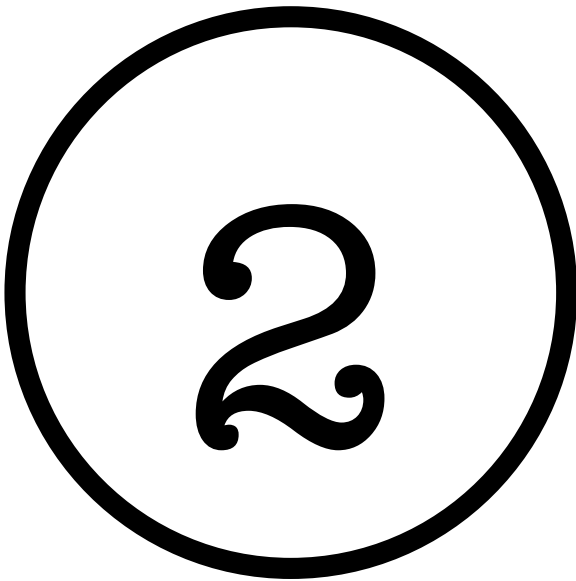


Explain why the circled point is considered an outlier.

A. It's y value is so far off from its \hat{y} value.	Go To # 2
B. It has a very large negative residual.	Go To # 9
C. Its residual is significantly larger than the residuals of the other points.	Go To # 6
D. It has the largest influence on the regression line.	Go To # 7



An environmental science teacher at a high school with a large population of students wanted to estimate the proportion of students at the school who regularly recycle plastic bottles. The teacher selected a random sample of students at the school to survey. Each selected student went into the teacher's office, one at a time, and was asked to respond yes or no to the following question.

Do you regularly recycle plastic bottles?

Given the method used by the environmental science teacher to collect the responses, explain how bias might have been introduced and describe how the bias might affect the point estimate of the proportion of all students at the school who would respond yes to the question.

A. Students do not want the teacher to know that they do not recycle, causing an overestimation of "yes" answers.	Go To # 7
B. The students may be pressured to say "yes" or embarrassed to say "no" to their teacher, thus causing more students to say they recycle.	Go To # 3
C. This response bias because students are more likely to say they recycle so they don't appear to not care about the environment, like their teacher.	Go To # 4
D. Students might have lied in order to look better, thus overestimating the true % "yes."	Go To # 9



A 95 percent confidence interval for the proportion of all students at a school who would respond yes to a survey question was calculated as $(0.584, 0.816)$.

How many students were in the sample?

A. 60	Go To # 10
B. 71	Go To # 1
C. 51	Go To # 8
D. 64	Go To # 5



Approximately 3.5 percent of all children born in a certain region are from multiple births (that is, twins, triplets, etc.). Of the children born in the region who are from multiple births, 22 percent are left-handed. Of the children born in the region who are from single births, 11 percent are left-handed.

What is the probability that a randomly selected child born in the region is left-handed?

A. 0.330	Go To # 10
B. 0.114	Go To # 3
C. 0.106	Go To # 5
D. 0.008	Go To # 8



Approximately 3.5 percent of all children born in a certain region are from multiple births (that is, twins, triplets, etc.). Of the children born in the region who are from multiple births, 22 percent are left-handed. Of the children born in the region who are from single births, 11 percent are left-handed.

What is the probability that a randomly selected child born in the region is a child from a multiple birth, given that the child selected is left-handed?

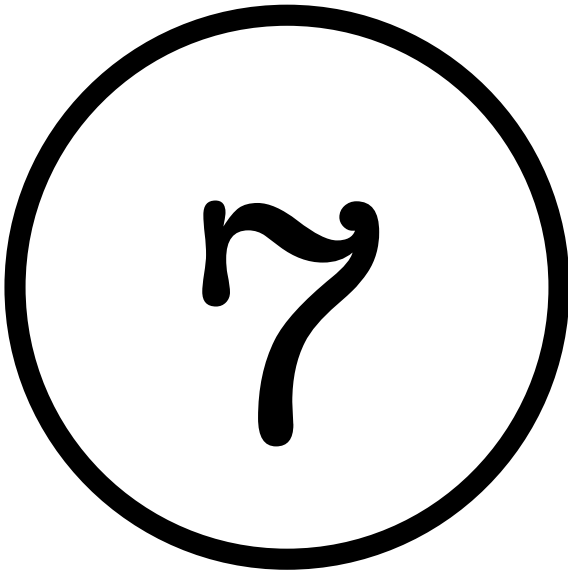
A. 0.667	Go To # 2
B. 0.307	Go To # 1
C. 0.068	Go To # 8
D. 0.012	Go To # 6



Approximately 3.5 percent of all children born in a certain region are from multiple births (that is, twins, triplets, etc.). Of the children born in the region who are from multiple births, 22 percent are left-handed. Of the children born in the region who are from single births, 11 percent are left-handed.

A random sample of 20 children born in the region will be selected. What is the probability that the sample will have at least 3 children who are left-handed?

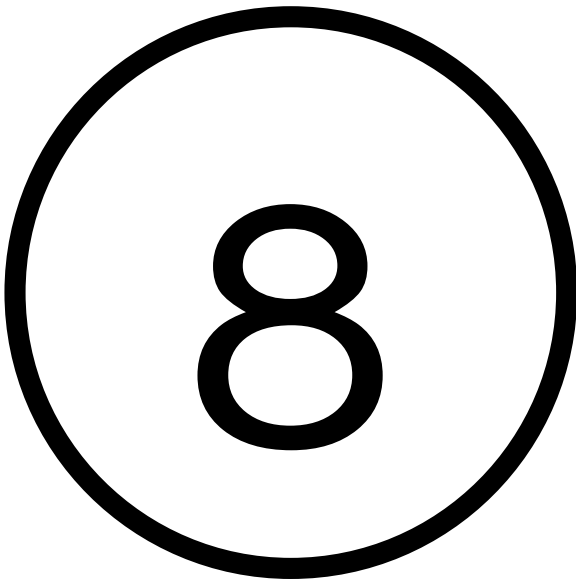
A. 0.402	Go To # 2
B. 0.216	Go To # 7
C. 0.305	Go To # 9
D. 0.981	Go To # 4



The anterior cruciate ligament (ACL) is one of the ligaments that help stabilize the knee. Surgery is often recommended if the ACL is completely torn, and recovery time from the surgery can be lengthy. A medical center developed a new surgical procedure designed to reduce the average recovery time from the surgery. To test the effectiveness of the new procedure, a study was conducted in which 210 patients needing surgery to repair a torn ACL were randomly assigned to receive either the standard procedure or the new procedure.

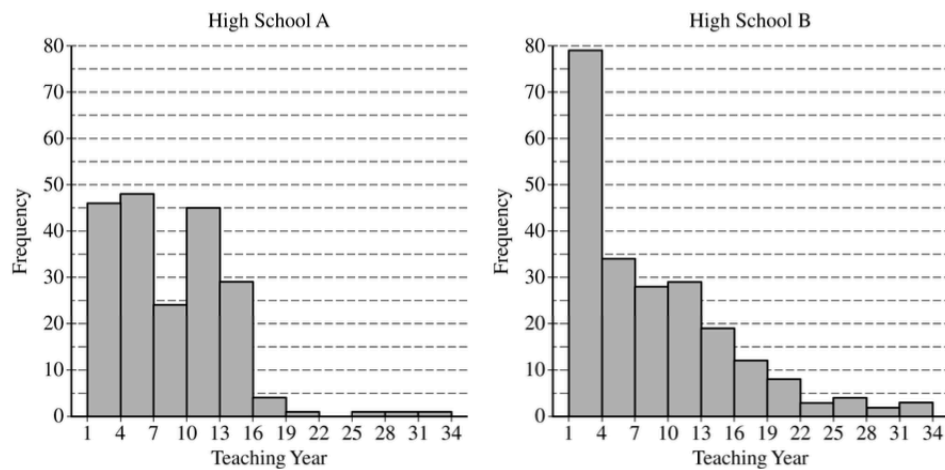
Based on the design of the study, would a statistically significant result allow the medical center to conclude that the new procedure causes a reduction in recovery time compared to the standard procedure, for patients similar to those in the study? Explain your answer.

A. Yes, because with a statistically significant result, the medical center will be able to see which procedure works better.	Go To # 5
B. Yes, because the patients were randomly assigned to receive the new or standard procedure and there is a large sample size.	Go To # 4
C. Yes. Treatments were randomly assigned, so we can generalize results to a larger population. Comparison allows causation to be concluded.	Go To # 3
D. Yes, because treatments were randomly assigned to ACL patients, and blocking was used to reduce effects from confounding variables.	Go To # 10

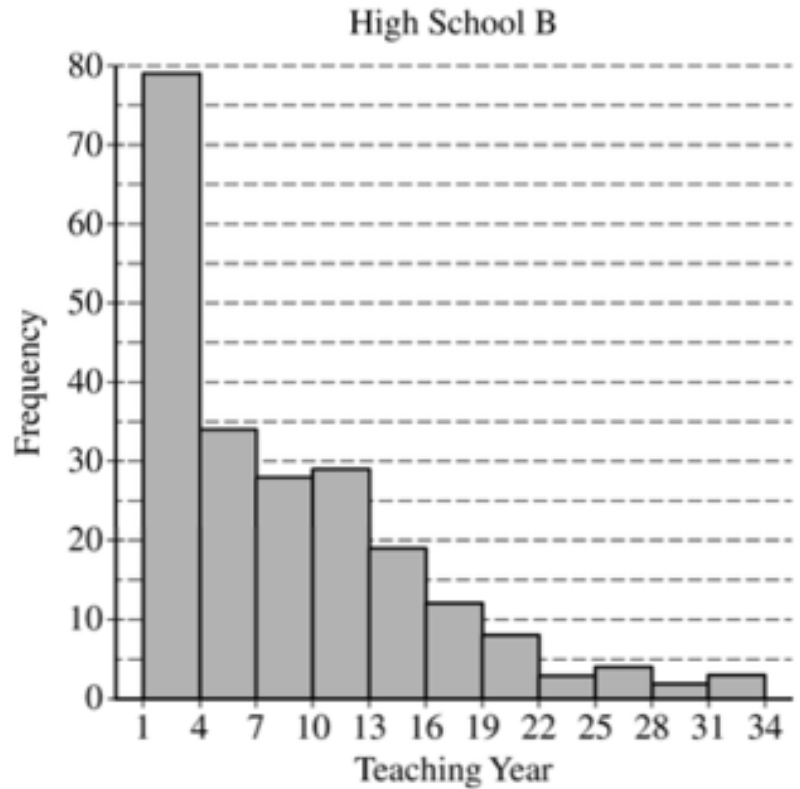
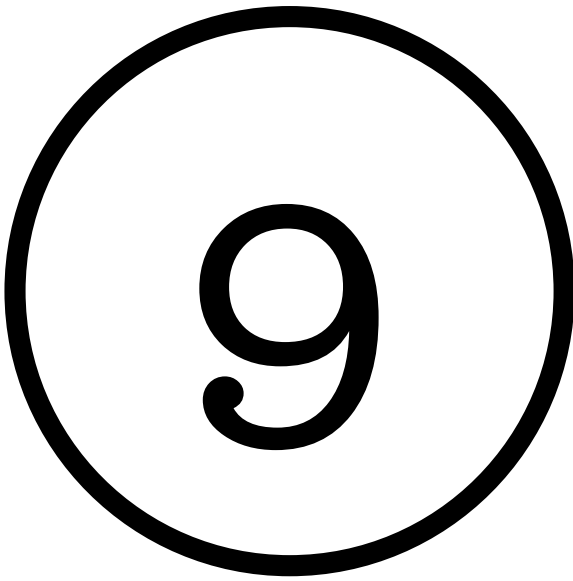


Teaching year is recorded as an integer, with first-year teachers recorded as 1, second-year teachers recorded as 2, and so on. Both sets of data have a mean teaching year of 8.2, with data recorded from 200 teachers at High School A and 221 teachers at High School B. On the histograms, each interval represents possible integer values from the left endpoint up to but not including the right endpoint.

The median teaching year for one high school is 6, and the median teaching year for the other high school is 7. Identify which high school has each median and justify your answer.



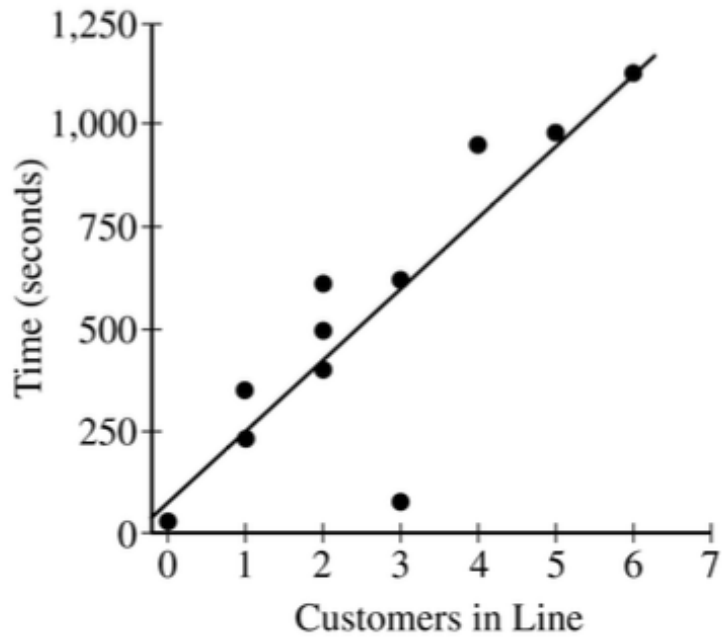
<p>A. $A=6$, $B=7$. $\approx 51\%$ of B's data is < 7, while $\approx 47\%$ of A's data is below 7</p>	<p>Go To # 9</p>
<p>B. $A=7$, $B=6$ because A's distribution is less left-skewed than B's. The more skewness to the left, the lower the median.</p>	<p>Go To # 2</p>
<p>C. $A=7$, $B=6$. B's distribution is more skewed right than A's, causing the median to be farther below the mean of 8.2 than A's distribution.</p>	<p>Go To # 1</p>
<p>D. $A=7$, $B=6$. B's distribution is skewed right, causing the median of B to be less than the median of A.</p>	<p>Go To # 6</p>



The standard deviation of the teaching year for the 221 teachers at High School B is 7.2, and the mean is 8.2. If one teacher is selected at random from High School B, what is the probability that the teaching year for the selected teacher will be within 1 standard deviation of the mean of 8.2 ?

A. 0.824	Go To # 7
B. 0.837	Go To # 3
C. 0.950	Go To # 10
D. 0.683	Go To # 4

10



Predictor	Coef	SE Coef	T	P
Constant	72.95	110.36	0.66	0.525
Customers in line	174.40	35.06	4.97	0.001

S = 200.01 R-Sq = 73.33% R-Sq (adj) = 70.37%

Identify and interpret in context the coefficient of determination, r^2 .

A. On average, 73.33% of the variability is accounted for by the regression model of customers in line and time to checkout.	Go To # 1
B. 73.33% of the data is accounted for by the least-squares regression line on time and number of customers.	Go To # 6
C. 73.33% of the variability in customer's checkout time is accounted for by the amount of variability in customers in line.	Go To # 5
D. 73.33% of the variability in the predicted checkout time is explained by the linear relationship between time and # of customers.	Go To # 8

2018 AP Statistics Exam



Key

1

6

2

9

7

4

3

10

5

8

- Notes:**
1. All questions are from the first half of the course.
 2. There are three probability questions.