

Is one form of the AP exam harder?



Last year, East Kentwood High School had 30 students take the AP Statistics exam. They were informed later that the College Board gave two forms of the exam, which were randomly assigned to the students. Here are the results:

Form A	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5
--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Form B	2	2	3	3	4	4	4	4	4	5	5	5	5	5	5
--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Mean score Form A (\bar{x}_A) ? _____ Mean score Form B (\bar{x}_B) ? _____

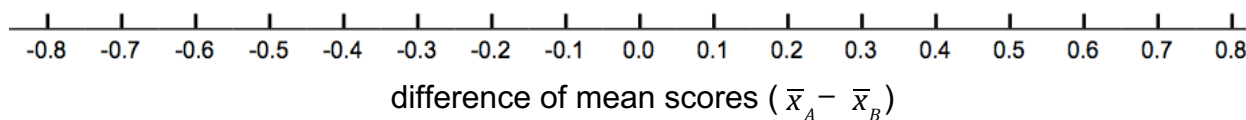
What is the difference in means $\bar{x}_A - \bar{x}_B$? _____

Assume the two forms are the same difficulty, so if Doug scored a 5 on Form A, he would also score a 5 on Form B. In other words, Doug is a 5 no matter which form he is randomly assigned.

1. The 30 AP scores from the class are written on 30 cards. Randomly assign half of the students to get Form A and the other half to get Form B. What is the difference in mean scores for this random assignment?

$\bar{x}_A =$ _____ $\bar{x}_B =$ _____ $\bar{x}_A - \bar{x}_B =$ _____

2. Write the difference of mean scores on a sticker dot and take it to the poster at the front of the room. Sketch the dotplot below.



3. East Kentwood had a difference of mean scores of $4.20 - 4.0 = 0.2$. Is this outcome surprising if we assume both forms are the same difficulty? Explain.

4. Based on the simulation, do we have convincing evidence that one form of the exam is harder? Explain.

Significance Test for a Difference in Means

Important ideas:

Check Your Understanding

Last year, East Kentwood High School had 30 students take the AP Statistics exam. They were informed later that the College Board gave two forms of the exam, which were randomly assigned to the students. The two forms had a difference of mean scores of $4.20 - 4.0 = 0.2$. Do the data provide convincing evidence that one form of the AP exam is harder than the other?

Complete the first two steps of a significance test.

STATE: Parameter:

Statistic:

Hypotheses:

Significance level:

PLAN: Name of procedure:

Check conditions: