MAT.HS.ER.2.00SID.C.264

Sample Item ID:	MAT.HS.ER.2.00SID.C.264
Grade:	HS
Primary Claim:	**Claim 2: Problem Solving** Students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Statistics and Probability
Secondary Content Domain(s):	
Assessment Target(s):	2C: Interpret results in the context of a situation. 2A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 2B: Select and use appropriate tools strategically. 1P: Summarize, represent, and interpret data on a single count or measurement variable.
Standard(s):	S-ID.3
Mathematical Practice(s):	1, 5
DOK:	2
Item Type:	ER
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Scoring Response.
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	
Notes:	

The dot plots below compare the number of minutes 30 flights made by two airlines arrived before or after their scheduled arrival times.

Airline P

Airline Q
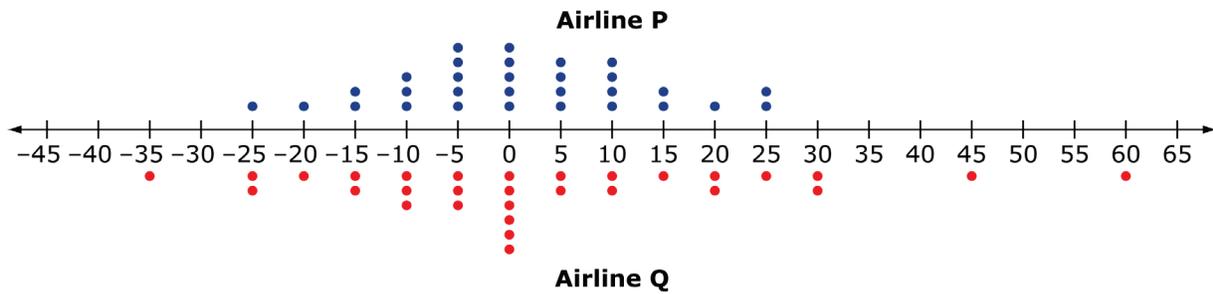
- Negative numbers represent the minutes the flight arrived **before** its scheduled time.
- Positive numbers represent the minutes the flight arrived **after** its scheduled time.
- Zero indicates the flight arrived **at** its scheduled time.

Based on these data, from which airline will you choose to buy your ticket? Use the ideas of center and spread to justify your choice.

Sample Top-Score Response:

I would choose to buy the ticket from Airline P. Both airlines are likely to have an on-time arrival since they both have median values at 0. However, Airline Q has a much greater range in arrival times. Airline Q could arrive anywhere from 35 minutes early to 60 minutes late. For Airline P, this flight arrived within 10 minutes on either side of the scheduled arrival time about 2/3 of the time, and for Airline Q, that number was only about 1/2. For these reasons, I think Airline P is the better choice.

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student has a solid understanding of how to make productive use of knowledge and problem-solving skills by comparing center and spread of two data sets using a graph and interpreting the results. The student chooses Airline P and clearly explains that both airlines have the same center but that Airline P has a smaller spread.

1 point: The student has some understanding of how to make productive use of knowledge and problem-solving skills by comparing center and spread of two data sets using a graph and interpreting the results. The student states that either airline could be chosen because they have the same median and does not address the issue of spread. **OR** The student states that both airlines have the same median and chooses Airline P but does not justify the choice based on spread. **OR** The student explains that Airline P would be the better choice based on the smaller spread but does not identify that both airlines have the same median.

0 points: The student demonstrates an inconsistent understanding of how to make productive use of knowledge and problem-solving skills by comparing center and spread of two data sets using a graph and interpreting the results. The student does not state that the two airlines have the same median and that Airline Q has greater spread. The student either does not make a choice between the two airlines or makes a choice but does not defend it using center or variation.