Illustrative Mathematics

8.SP US Airports, Assessment Variation

Alignments to Content Standards

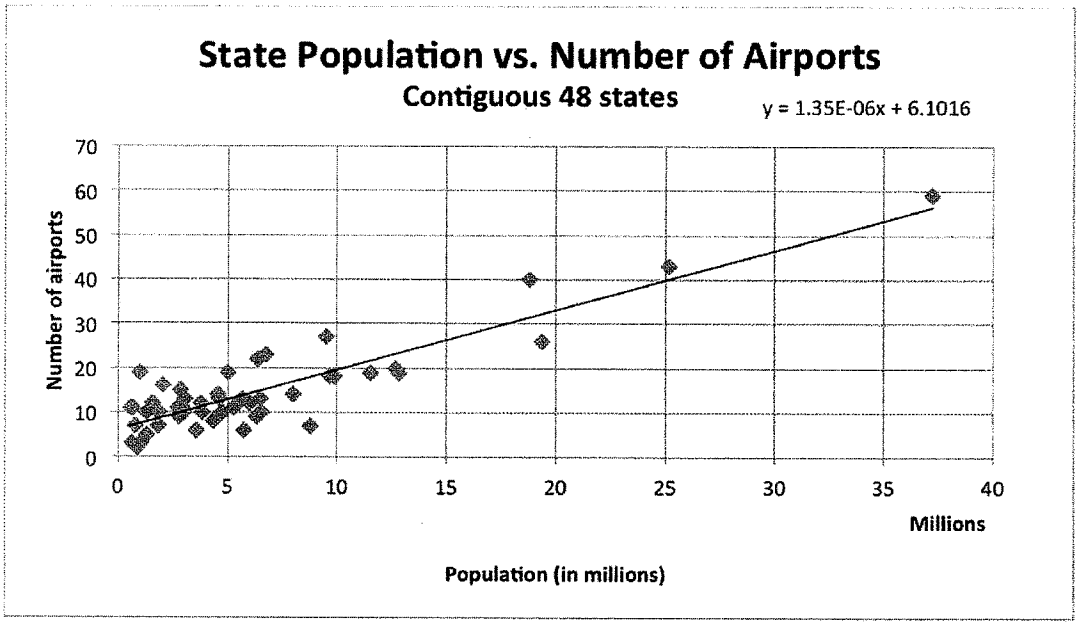
- Alignment: 8.SP.A.3

Tags

Tags: summative assessment, SAP

The scatter plot below shows the relationship between the number of airports in a state and the population of that state according to the 2010 Census. Each dot represents a single state.

The number of airports in each state comes from data on http://www.nationalatlas.gov/atlasftp.html?openChapters=chptrans#chptrans . The data for population comes from the 2010 census: http://www.census.gov/2010census/data/



a. How would you characterize the relationship between the number of airports in a state and the state's population? (Select one):
   i. The variables are positively associated; states with higher populations tend to have fewer airports.
   ii. The variables are negatively associated; states with higher populations tend to have fewer airports.
   iii. The variables are positively associated; states with higher populations tend to have more airports.
   iv. The variables are negatively associated; states with higher populations tend to have more airports.
   v. The variables are not associated.

LaToya uses the function $y = (1.35 \times 10^{-6})x + 6.1$ to model the relationship between the number of airports, y and the population in a state, x.

b. How many airports does LaToya's model predict for a state with a population of 30 million people? [_____].

c. What does the number 6.1 that appears in LaToya's function mean in the context of airports vs. populations? (Select one.)
   i. The average number of airports in a state is 6.1.
   ii. The median number of airports in a state is 6.1.
   iii. The model predicts a population of 6.1 people in a state with no airports.
   iv. The model predicts 6.1 airports in a state with no people.
   v. The model predicts that 6.1 states have no airports.
   vi. The model predicts 6.1 more airports, on average, for each additional person in a state.
   vii. The model predicts 6.1 fewer airports, on average, for each additional person in a state.
   viii. The number 6.1 cannot be interpreted in this context.

d. What does the number 1.35×10^{-6} that appears in LaToya's function mean in the context of airports vs. populations? (Select one.)
   i. The average number of airports in a state is 1.35×10^{-6}.
   ii. The median number of airports in a state is 1.35×10^{-6}.
   iii. The model predicts 1.35×10^{-6} airports in a state with no people.
   iv. The model predicts 1.35×10^{-6} people in a state with no airports.
   v. The model predicts that 1.35×10^{-6} states have no airports.
   vi. The model predicts 1.35×10^{-6} more airports, on average, for each additional person in a state.
   vii. The model predicts 1.35×10^{-6} fewer airports, on average, for each additional person in a state.
   viii. The number 1.35×10^{-6} cannot be interpreted in this context.

e. Fill in the following newspaper headline based on this relationship:

On average, a state in the contiguous 48 US states has 1 additional airport for every [ ] [ ] *additional people.*