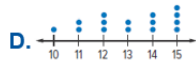
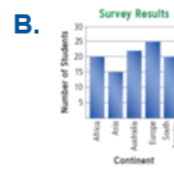


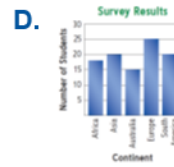
1 Which dot plot represents the data?
10, 13, 15, 14, 11, 12, 14, 15, 11, 14, 12, 13, 14, 15, 11



2 Miguel asked several students which continent they would like to visit. The results are shown in the table. Which bar graph represents the data?

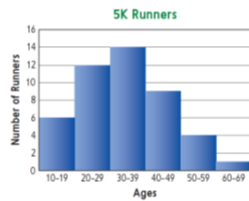


Continent	Frequency
Africa	18
Asia	14
Australia	20
Europe	25
South America	22



3 The histogram shows the ages of people who participated in a 5K race to raise money for charity. How many people were less than 40 years old?

- A. 9
- B. 14
- C. 30
- D. 32



Standard Deviation

- **deviation** is the distance from the piece of data you are examining to the mean
- **variance** is a measure of spread found by averaging the squares of the deviation calculated for each piece of data
- Taking the square root of variance, you get standard deviation

Key Concept Standard Deviation

Step 1 Find the mean, \bar{x} .

Step 2 Find the square of the difference between each data value x_n and the mean, $(\bar{x} - x_n)^2$.

Step 3 Find the sum of all of the values in Step 2.

Step 4 Divide the sum by the number of values in the set of data n . This value is the variance.

Step 5 Take the square root of the variance.

- σ^2 (lower case sigma squared) is used to represent variance
- σ is used to represent standard deviation
- σ is commonly used to measure the spread of data, with larger values of σ indicating greater spread

standard deviation mean

$$\sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$$

$\sigma^2 = \text{variance}$

Low Standard Deviation indicates the data tends to be close to the mean.

High Standard Deviation indicates the data is spread out over a larger range of values.

sum (add it up)

SCORES Leo tracked his homework scores for the past week: {100, 0, 100, 50, 0}. Find and interpret the standard deviation of the data set.

① $\bar{x} = \frac{250}{5} = 50$
(mean)

② variance (square of the difference)

$$\begin{array}{r} (100 - 50)^2 = 2500 \\ (0 - 50)^2 = 2500 \\ (100 - 50)^2 = 2500 \\ (50 - 50)^2 = 0 \\ (0 - 50)^2 = 2500 \\ \hline 10000 \end{array}$$

③ Divide

$$\sqrt{\frac{10000}{5}}$$

$$\sqrt{2000}$$

④ 44.72

BASEBALL Kyle can throw a baseball left-handed or right-handed. Below are the speeds in miles per hour of 16 throws from each hand. Compare the means and standard deviations.

Left-Handed			
68	71	70	69
67	67	73	71
74	68	68	71
72	70	66	70

Right-Handed			
71	78	77	70
81	72	74	80
70	69	79	83
81	68	83	82

$$\bar{x} = 69.7$$

(mean)

$$\sigma = 2.2$$

(sq. root of the variance)

$$\bar{x} = 76.1$$

$$\sigma = 5.3$$

Practice / Homework:

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