ACTIVITY 2
MATHia CONNECTION
• Interpreting Dot Plots

The Statistical Process

TOPIC 1   LESSON 2

Getting Started   1   Activity 2   3   4   Talk the Talk

Describing Distributions

When you analyze a graphical representation of numeric data, you can look at its shape, center, and spread to draw conclusions.

HABITS OF MIND
• Look for and make use of structure.
• Look for and express regularity in repeated reasoning.

You call the overall shape of a graph the *distribution* of data. The way the data spreads out is its **distribution**. The most common distributions are *symmetric, skewed right,* and *skewed left.*
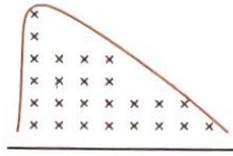
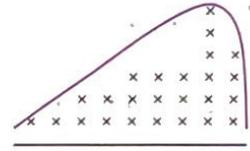## Shapes of Typical Distributions of Graphical Displays of Data
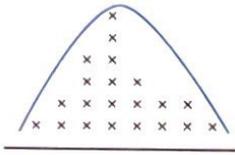
symmetric

• The peak of the data is in the middle.

• The left and right halves of the graph are mirror images, or almost mirror images, of each other.

skewed right

• The peak of the data is to the left side of the graph.

• There are only a few data points to the right side of the graph.

skewed left

• The peak of the data is to the right side of the graph.

• There are only a few data points to the left side of the graph.

① Miko says that the dot plot for the number of gold medals won is skewed right. Do you agree with her statement? **Explain your reasoning.**

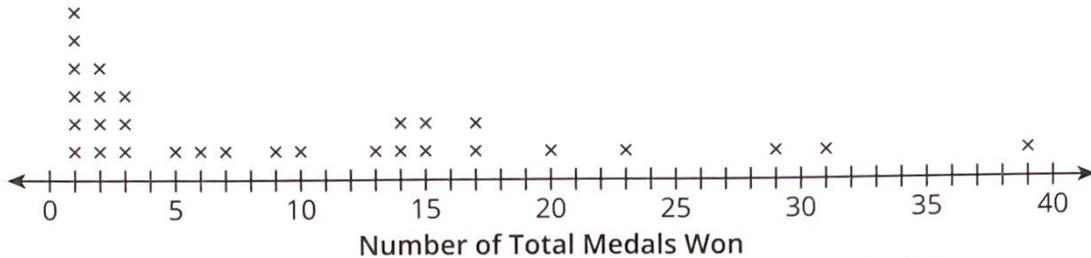**Gold Medals Won by Countries at the 2018 Winter Olympics**

Number of Gold Medals Won
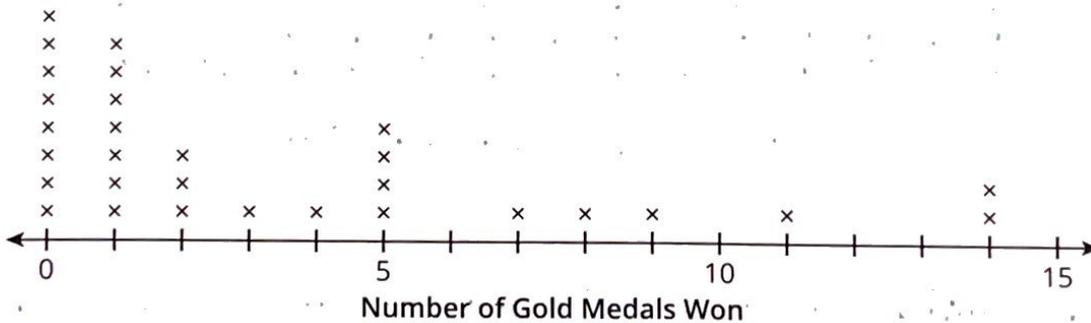
Miko is correct. The two countries that won 14 gold medals pulls the middle of the data to the right.

> Analyze the dot plot.

**Total Medals Won by Countries
at 2018 Winter Olympics**

Number of Total Medals Won

2 What is the distribution of the dot plot? **Explain what this means in terms of the total number of medals won.**

Skewed Right.
The one country that won 39 medals will make the middle
of the data seem greater.

When analyzing a graphical display of data, you can also look for any interesting patterns. Some of these patterns include:

- **clusters**—areas where data group close together

- **gaps**—areas where there are no data

- **peaks**—values that contain more data points than the values on either side of it

- **outliers**—data values that lie a large distance from the other data. Outliers usually accompany gaps in data.

TAKE NOTE...
Gaps usually span multiple possible data values.

3 Identify any clusters, gaps, peaks, or outliers in the dot plot Total Medals Won by Countries at the 2018 Winter Olympics, located above. **Explain what this means in terms of the total number of medals won.**

Most countries won 1-15 medals (cluster)
The peak is 1 medal won.
Gaps in the high 20's & 30's
Outlier is 39 medals.

4 Identify any clusters, gaps, peaks, or outliers in the plot for the Gold Medals Won by Countries at the 2018 Winter Olympics, located in Question 1. **Explain what this means in terms of the number of gold medals won.**

Cluster → 0-5 medals
Peak → 0 medals
Gap → 12-13 medals
Outlier → none

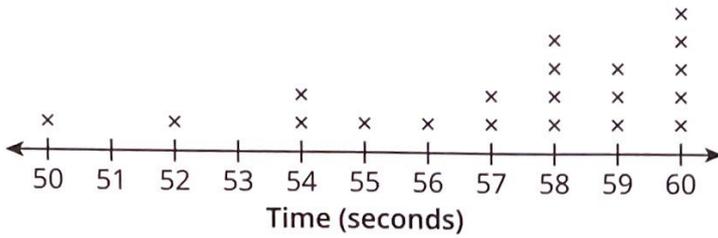Another common shape for data distribution is a *uniform distribution*.

> Analyze the dot plots from the Getting Started activity.

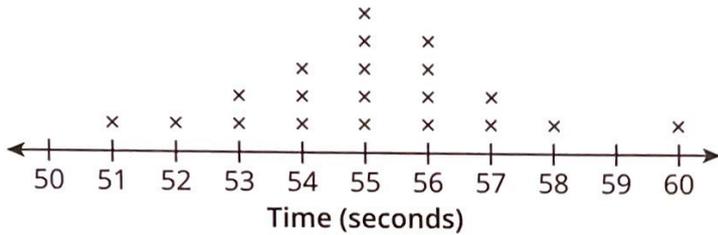**5** Describe the shape of each dot plot, including its overall shape and any relevant patterns.

(a)

Rock-Climbing Times (6th Grade)

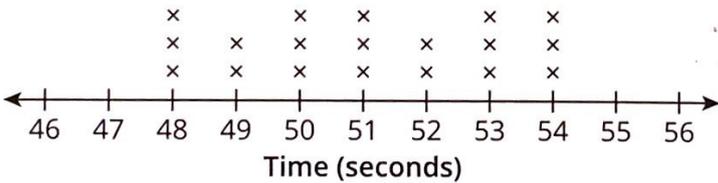Time (seconds)

Skewed left
Peak at 60
Cluster 57→60

(b)

Rock-Climbing Times (7th Grade)

Time (seconds)

Symmetric
Peak → 55

(c)

Rock-Climbing Times (8th Grade)

Time (seconds)

uniform
no gaps or peaks

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