

### Lesson 11-3

#### Example 1 Construct a Circle Graph from Percents

**SPORTS** The table at the right shows the percent of medals earned by each country during the Winter 2002 Olympics in Salt Lake City. Construct a circle graph using the information.

Country	Percent of Medals
Germany	15%
USA	15%
Norway	10%
Russia	7%
Canada	7%
Austria	7%
Others	39%

**Step 1** There are  $360^\circ$  in a circle. So, multiply each percent by 360 to find the number of degrees for each section of the graph.

- Germany:  $15\%$  of  $360^\circ = 0.15 \cdot 360$  or  $54^\circ$
- USA:  $15\%$  of  $360^\circ = 0.15 \cdot 360$  or  $54^\circ$
- Norway:  $10\%$  of  $360^\circ = 0.10 \cdot 360$  or  $36^\circ$
- Russia:  $7\%$  of  $360^\circ = 0.07 \cdot 360$  or about  $25^\circ$
- Canada:  $7\%$  of  $360^\circ = 0.07 \cdot 360$  or about  $25^\circ$
- Austria:  $7\%$  of  $360^\circ = 0.07 \cdot 360$  or about  $25^\circ$
- Others:  $39\%$  of  $360^\circ = 0.39 \cdot 360$  or about  $140^\circ$

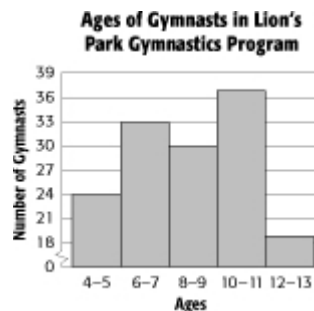
**Step 2** Use a compass to draw a circle and a radius. Then use a protractor to draw a  $54^\circ$  angle. This section represents Germany. From the new radius, draw the next angle. Repeat for each of the remaining angles. Label each section. Then give the graph a title.

Percent of Medals in 2002 Winter Olympics



#### Example 2 Construct a Circle Graph from Data GYMNASTICS

Construct a circle graph of the data in the histogram at the right.



**Step 1** Find the total number of gymnasts in the program.

$$24 + 33 + 30 + 37 + 19 = 143$$

**Step 2** Find the ratio that compares the number in each age group to the total number of gymnasts. Round to the nearest hundredth.

$$4 \text{ to } 5: 24 \div 143 \approx 0.17$$

$$6 \text{ to } 7: 33 \div 143 \approx 0.23$$

$$8 \text{ to } 9: 30 \div 143 \approx 0.21$$

$$10 \text{ to } 11: 37 \div 143 \approx 0.26$$

$$12 \text{ to } 13: 19 \div 143 \approx 0.13$$

**Step 3** Use these ratios to find the number of degrees of each section. Round to the nearest degree if necessary.

$$4 \text{ to } 5: 0.17 \cdot 360 = 61.2 \text{ or about } 61^\circ$$

$$6 \text{ to } 7: 0.23 \cdot 360 = 82.8 \text{ or about } 83^\circ$$

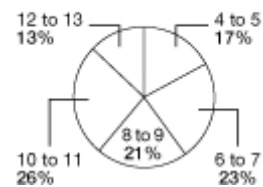
$$8 \text{ to } 9: 0.21 \cdot 360 = 75.6 \text{ or about } 76^\circ$$

$$10 \text{ to } 11: 0.26 \cdot 360 = 93.6 \text{ or about } 94^\circ$$

$$12 \text{ to } 13: 0.13 \cdot 360 = 46.8 \text{ or about } 47^\circ$$

**Step 4** Use a compass and protractor to draw a circle and the appropriate sections. Label each section and give the graph a title. Write the ratios as percents.

**Ages of Gymnasts in Lion's Park Gymnastics Program**



**Example 3 Use a Circle Graph to Interpret Data**

**Use the circle graph to describe the makeup of the ages of the gymnasts in the Lion's Park Gymnastics Program.**

More gymnasts were either 10 or 11 years old. About 70% of the gymnasts were between 5 and 12 years of age.