

Identifying Populations and Samples In Exercises 25–34, identify the population and the sample.

31. A survey of 202 pilots found that 20% admit that they have made a serious error due to sleepiness. (Source: National Sleep Foundation)
43. Which part of the survey described in Exercise 31 represents the descriptive branch of statistics? Make an inference based on the results of the survey.

31. Population: All Pilots

Sample: The 202 pilots who participated in the survey.

43. Descriptive: 20% of the 202 pilots admit that they made a serious error due to sleepiness.

Inferential: (Answers may vary) - Sleepiness can cause serious errors.

- Not many people ($\frac{1}{5}$) make errors due to sleepiness!

Classifying Data by Type and Level In Exercises 27–32, determine whether the data are qualitative or quantitative, and determine the level of measurement of the data set.

- 30. Diving** The scores for the gold medal winning diver in the men's 10-meter platform event from the 2012 Summer Olympics are listed. (Source: *International Olympic Committee*)

97.20	86.40	99.90
90.75	91.80	102.60

Ordinal: the numbers can be put in order (e.g. increasing)
but the difference between them doesn't mean anything (or does it?)

Constructing a Frequency Distribution and a Frequency Histogram

In Exercises 31–34, construct a frequency distribution and a frequency histogram for the data set using the indicated number of classes. Describe any patterns.

34. Finishing Times

Number of classes: 8

Data set: Finishing times (in seconds) of all male participants ages 25 to 29 in a 5K race

1595	1472	1820	1580	1804	1635
1959	2020	1480	1250	2083	1522
1306	1572	1778	<u>2296</u>	1445	1716
1618	1824				

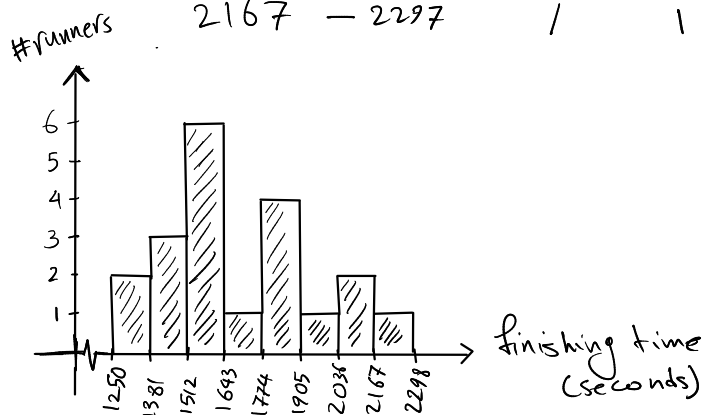
$$\text{Min} = 1250$$

$$\text{max} = 2296$$

$$\text{Range} = \text{max} - \text{min} = 2296 - 1250 = 1046$$

$$\text{Class width} = \frac{\text{Range}}{\# \text{ classes}} = \frac{1046}{8} = 130.75 \xrightarrow{\text{round up}} 131$$

Classes:	1250 – 1380	//	2 frequencies
	⁺¹³¹ 1381 – ⁺¹ 1511	///	3
	⁺¹³¹ 1512 – 1642	/// /	6
	⁺¹³¹ 1643 – 1773	/	1
	1774 – 1904	///	4
	1905 – 2035	/	1
	2036 – 2166	//	2
	2167 – 2297	/	1



26. New York City Marathon Use a pie chart to display the data. The data represent the number of men's New York City Marathon winners from each country through 2012. (Source: *New York Road Runners*)

United States	15	Tanzania	1	Great Britain	1
Italy	4	Kenya	9	Brazil	2
Ethiopia	2	Mexico	4	New Zealand	1
South Africa	2	Morocco	1		

country	f	f/n	angle
U.S.	15	$\frac{15}{42} \approx 0.36$	$(0.36)(360) \approx 129^\circ$
It.	4	$\frac{4}{42} \approx 0.10$	$\approx 34^\circ$
Et.	2	$\frac{2}{42} \approx 0.05$	$(0.05)(360) \approx 17^\circ$
SA.	2	$\frac{2}{42} \approx 0.05$	$\approx 17^\circ$
Ta.	1	$\frac{1}{42} \approx 0.02$	$(0.02)(360) \approx 9^\circ$
Ke	9	$\frac{9}{42} \approx 0.21$	$\approx 77^\circ$
Me	4	$\frac{4}{42} \approx 0.10$	$\approx 34^\circ$
Mo	1	$\frac{1}{42} \approx 0.02$	$\approx 9^\circ$
GB	1	$\frac{1}{42} \approx 0.02$	$\approx 9^\circ$
Br	2	$\frac{2}{42} \approx 0.05$	$\approx 17^\circ$
NZ	1	$\frac{1}{42} \approx 0.02$	$\approx 9^\circ$
	$\Sigma f = 42$		

