## Algebra 2

## 9-02 Populations, Samples, and Hypotheses

## Population

- Collection of $\qquad$ data of interest.
- i.e. all the people


## Sample

- __ of the population
- i.e. only the people surveyed

Identify the population and the sample. Describe the sample.
a. The owner of a dance studio surveys 32 dancers and finds that 25 of them prefer hip hop.
b. A counselor at a middle school reviews 225 students' class schedules and finds that 46 students have a science class during first period.

## Parameter

- Numerical description of a $\qquad$ characteristic


## Statistic

- Numerical description of a $\qquad$ characteristic
For all teenagers who had jobs last summer in a certain town, the mean hourly wage was $\$ 8.25$. Is the mean hourly wage a parameter or a statistic?

A survey of 912 men, ages 50-60 in Central America, found that the standard deviation of the lengths of their feet is about 4 centimeters. Is the standard deviation of the lengths of their feet a parameter or a statistic?

## Proportion

- Ratio of $\qquad$ with that characteristic to $\qquad$ number of members

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Use technology to simulate flipping a coin 20 times. What proportion of the 20 flips result in heads?
PRB \(\rightarrow\) randint \((1,2)\)
random.org/coins
random.org/dice
```

- Claim about a $\qquad$ characteristic
- To analyze, distinguish between results that occur by $\qquad$ and those that are $\qquad$ to occur by chance
- Using the simulator at andrews.edu/~rwright/algebra2/SamplingSimulator.html, the sample proportion needs to be in the middle $\qquad$ of the histogram. If $\qquad$ samples are simulated, then reject the hypothesis if it is in the $\qquad$ points on either end of the histogram.
You roll a six-sided die 5 times and do not get an even number. The probability of this happening is $\left(\frac{1}{2}\right)^{5}=0.03125$, so you suspect this die favors odd numbers. The die maker claims the die does not favor odd numbers or even numbers. What should you conclude when you roll the actual die 50 times and get (a) 23 odd numbers and (b) 40 odd numbers?

478 \#1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 22, 23, 25, 29, 31, 33, 35, 39, $41=20$

