

FREQUENCY TABLE

A **frequency table** is a table with two columns.

One column lists the *categories*, and another for the *frequencies* with which the items in the categories occur (how many items fit into each category).

Example

A local movie theater chain wants to understand which genres of movies are most popular among their customers to guide future movie screenings. They collect data on ticket sales for different genres over the past three months. The data is summarized in the following frequency table:

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A local movie theater chain wants to understand which genres of movies are most popular among their customers to guide future movie screenings. They collect data on ticket sales for different genres over the past three months. The data is summarized in the following frequency table:

Genre	Frequency (Tickets Sold)
Action	102
Comedy	85
Drama	76
Horror	58
Sci-Fi	64
Romance	43

Example

A hospital is analyzing the ages of patients admitted for routine check-ups in the past month to better understand the age demographics of their visitors.

The ages of 30 patients are recorded below:

24 26 29 31 33 36

36 38 38 42 45 47

48 50 52 54 56 59

60 61 63 65 65 67

70 73 75 77 79 82

Complete the frequency distribution for the data:

Example

A hospital is analyzing the ages of patients admitted for routine check-ups in the past month to better understand the age demographics of their visitors.

24 26 29 31 33 36
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48 50 52 54 56 59
60 61 63 65 65 67
70 73 75 77 79 82

Age Range	Frequency
20-29	
30-39	
40-49	
50-59	
60-69	
70-79	
80-89	

BAR GRAPH

A **bar graph** is a graph that displays a bar for each category with the length of each bar indicating the frequency of that category.

Example

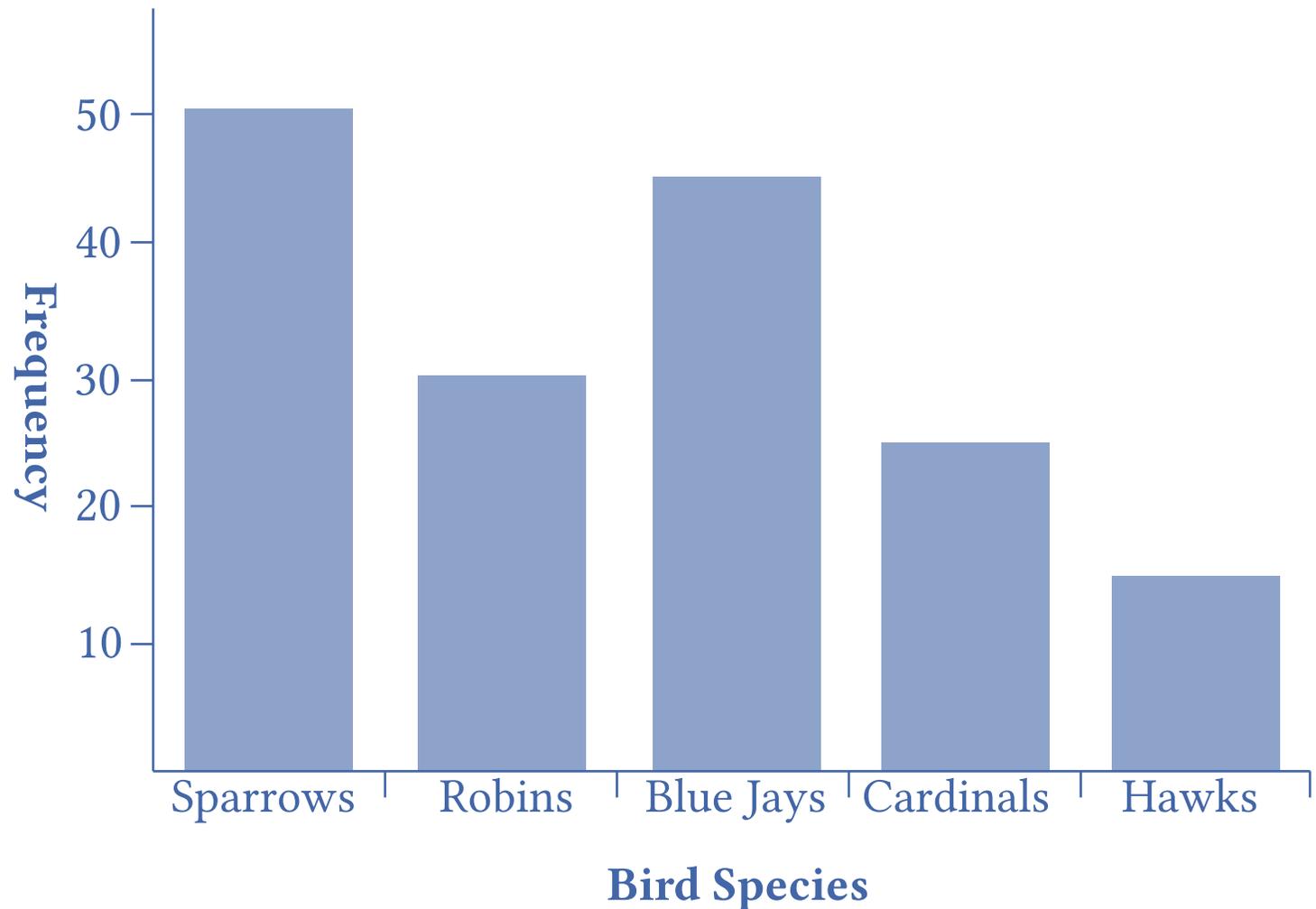
A local wildlife reserve is studying the behavior of different bird species visiting their park. Over the course of a month, park rangers record the number of sightings for five common bird species. They want to use this data to decide which areas of the park to focus conservation efforts on, based on which species are most commonly seen. The data collected is shown below:

Bird Species	Frequency
Sparrows	50
Robins	30
Blue Jays	45
Cardinals	25
Hawks	15

Example

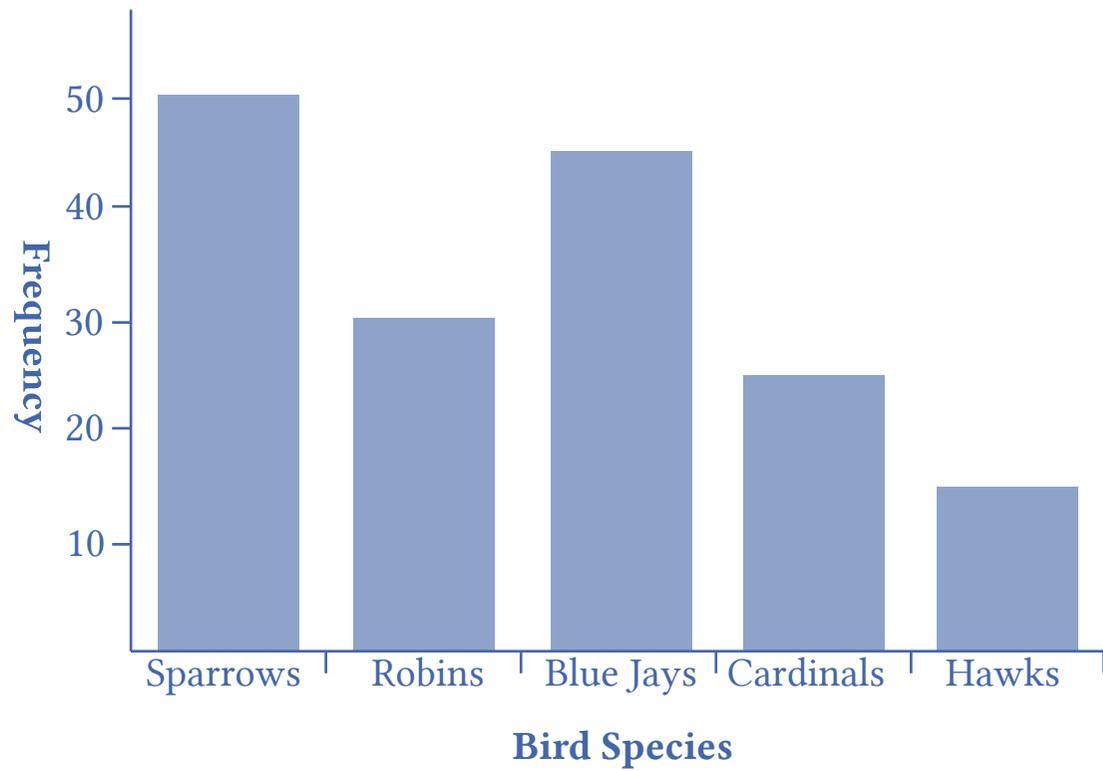
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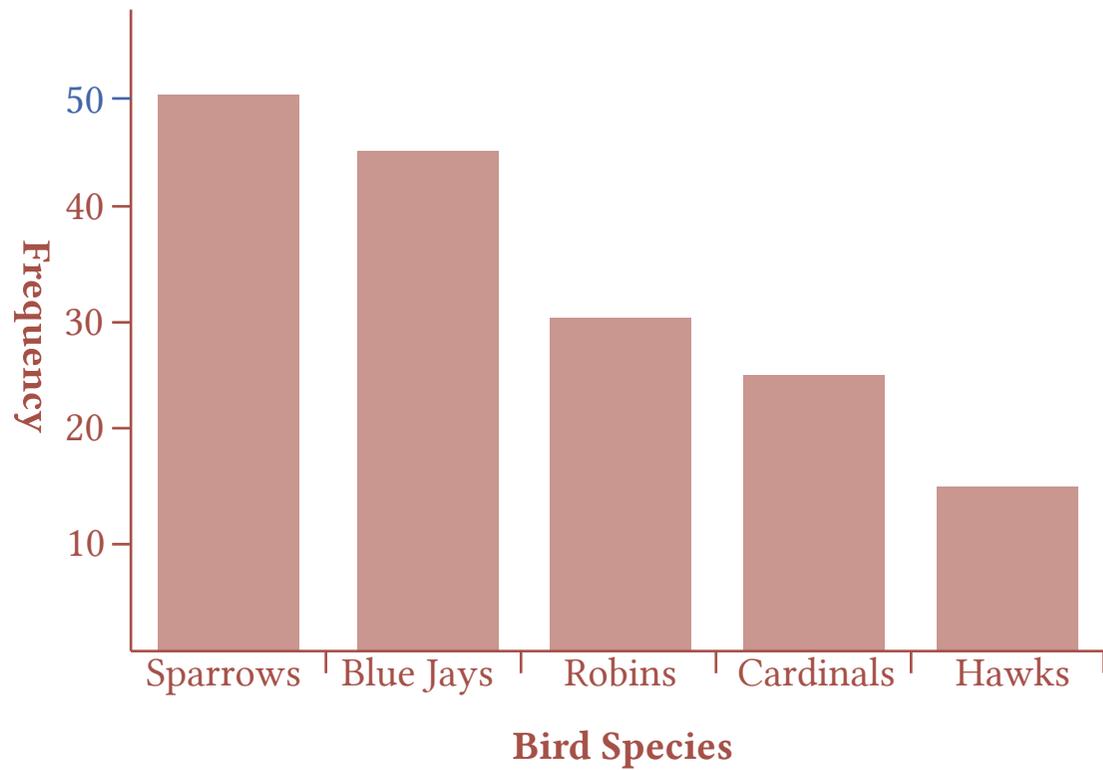


PARETO CHART

A **Pareto chart** is a bar graph ordered from *highest* to *lowest* frequency



Pareto chart

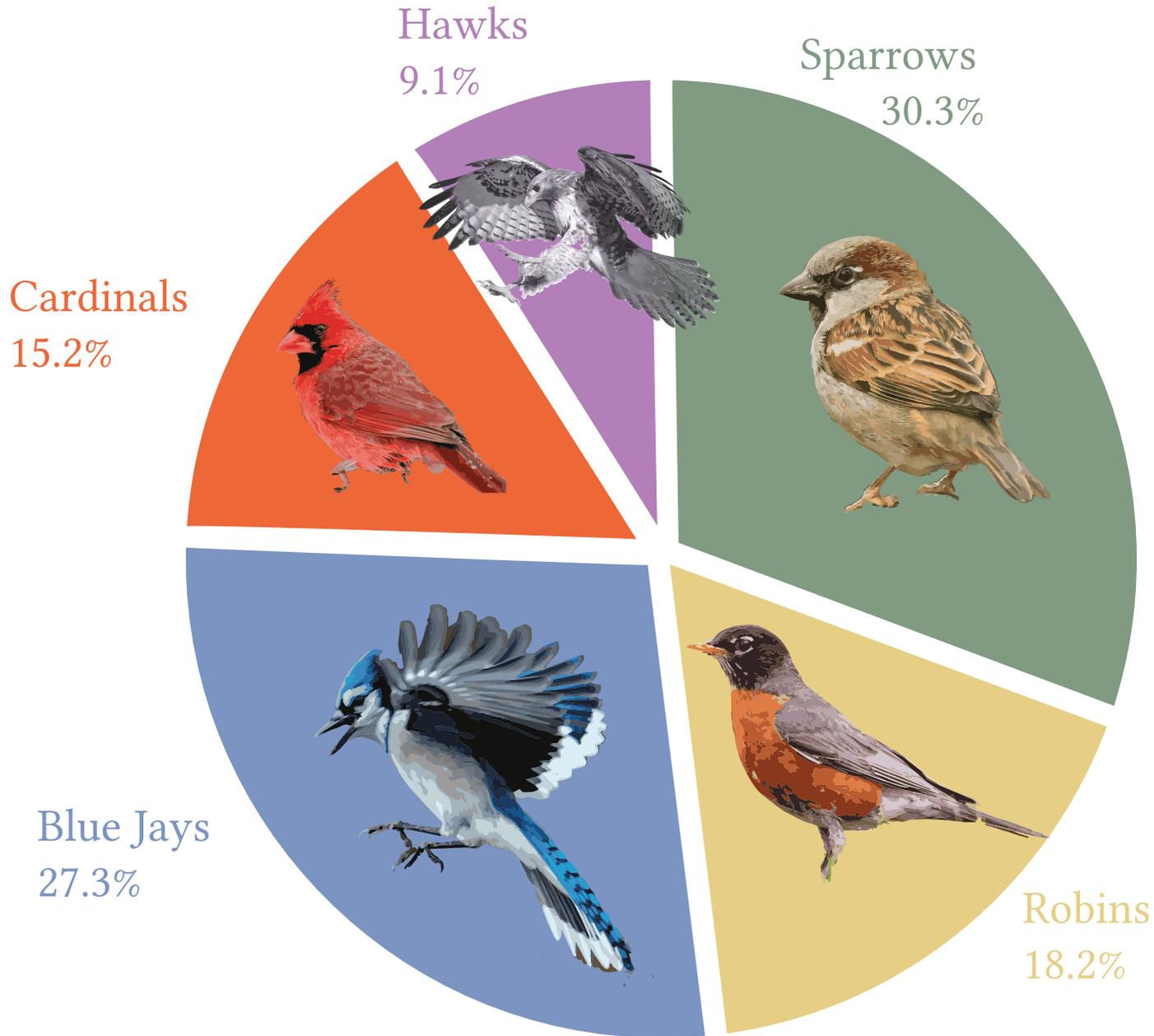


PIE CHART

A **pie chart** is a circle with wedges cut of varying sizes marked out like slices of pie or pizza.

The relative sizes of the wedges correspond to the relative frequencies of the categories.

Bird Species	Frequency
Sparrows	50
Robins	30
Blue Jays	45
Cardinals	25
Hawks	15



Question

Create a pie chart for the following frequency table:

Workshop Type	Frequency
Painting	3
Sculpture	1
Music	2
Dance	4

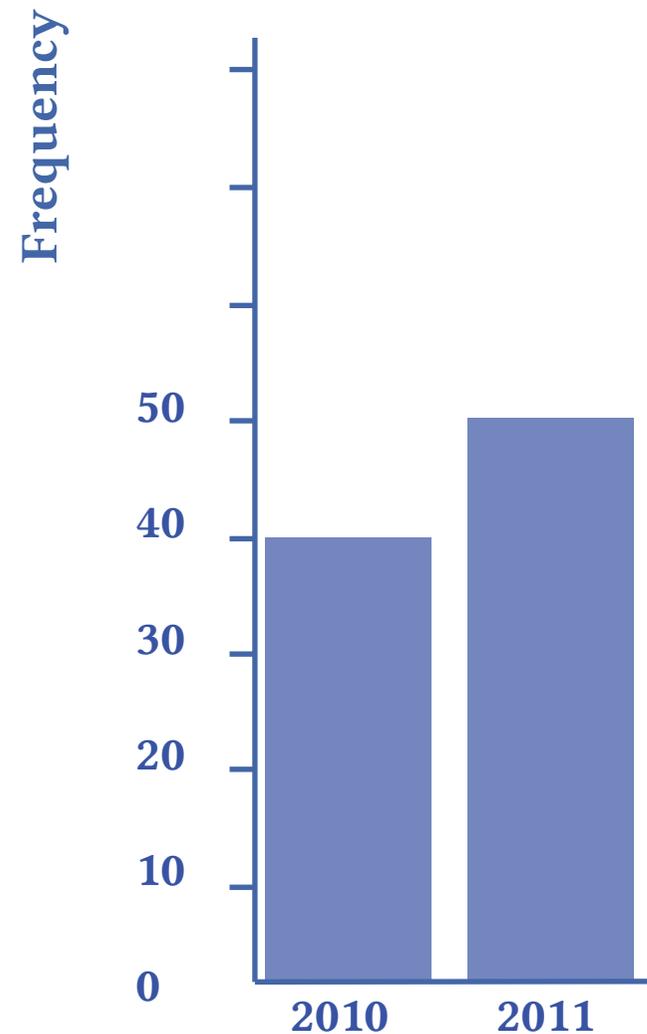
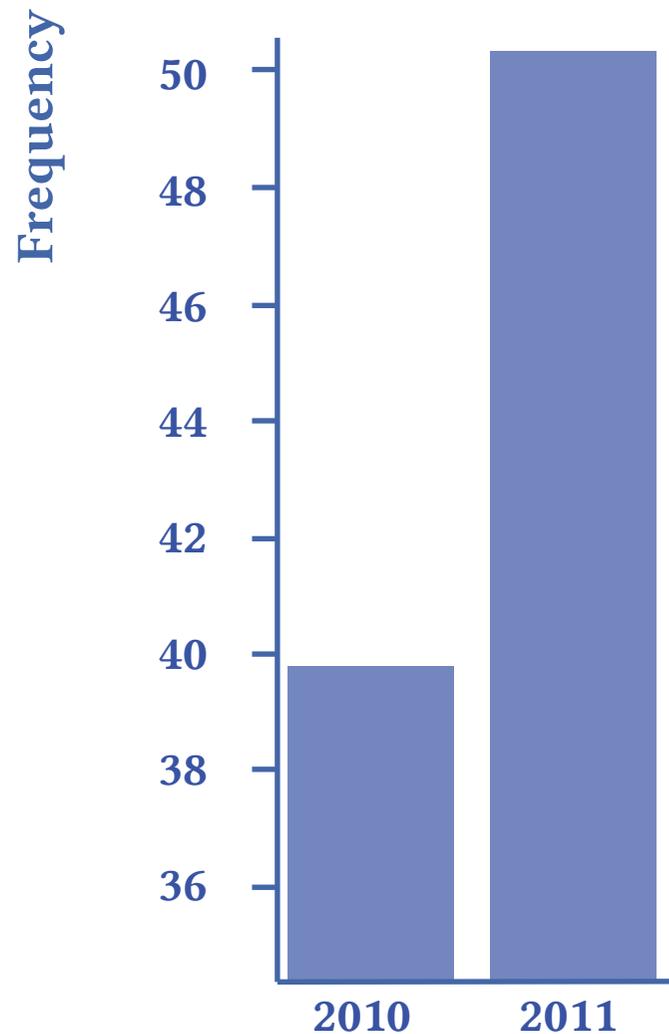
PICTOGRAM

A **pictogram** is a statistical graphic in which the size of the picture is intended to represent the frequencies or size of the values being represented.

Beware:

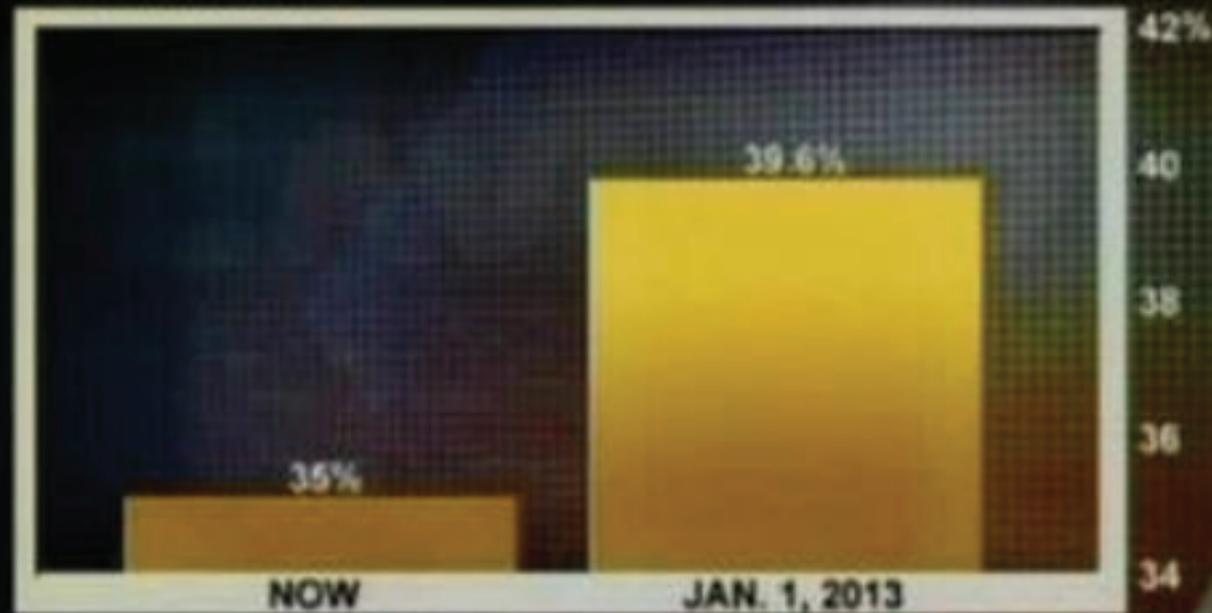
It is easy to be misled with charts

Can you compare the following bar charts? What is misleading here?



IF BUSH TAX CUTS EXPIRE

TOP TAX RATE



8:01 p ET

FOX
BUSINESS

TOP STORIES

TECHNOLOGY

CONSUMER

WITH THE JUSTICE DEPARTMENT AND ACQUIRES FULL T

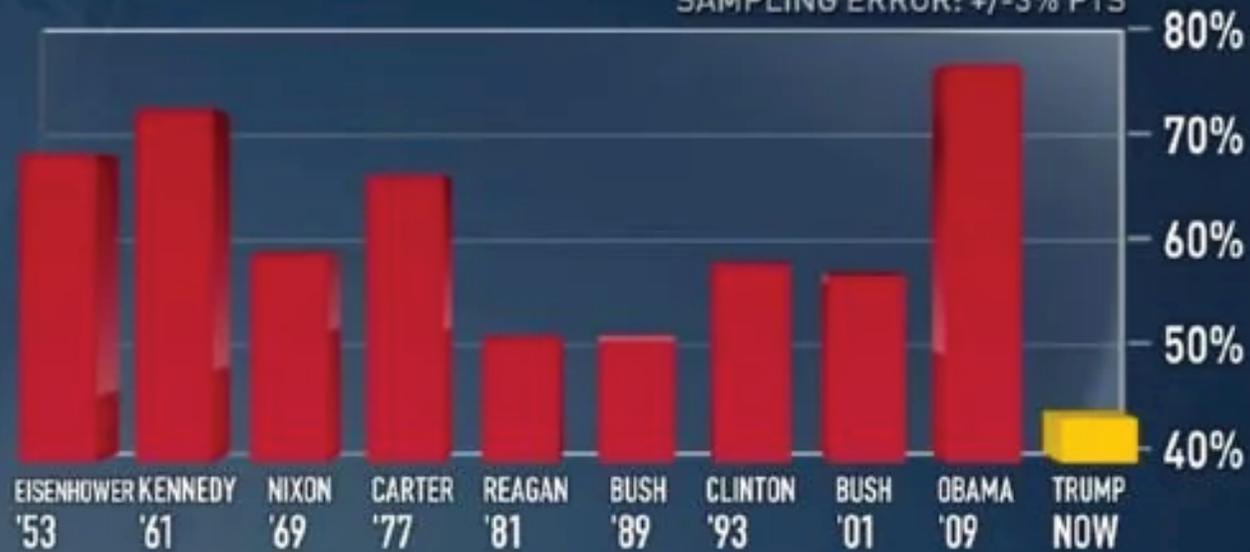
DOW 13008.68 ∇ 64.33

S&P 1379.32 ∇ 5.98

NASDAQ 2939.52 ∇ 6.32

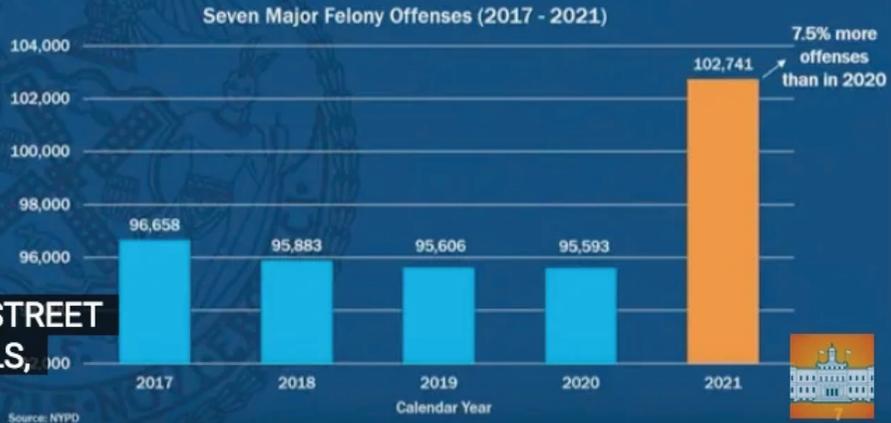
EARLY APPROVAL RATINGS

SOURCE: CNN/ORC POLL | CNN/USA TODAY/GALLUP | GALLUP
SAMPLING ERROR: +/-3% PTS

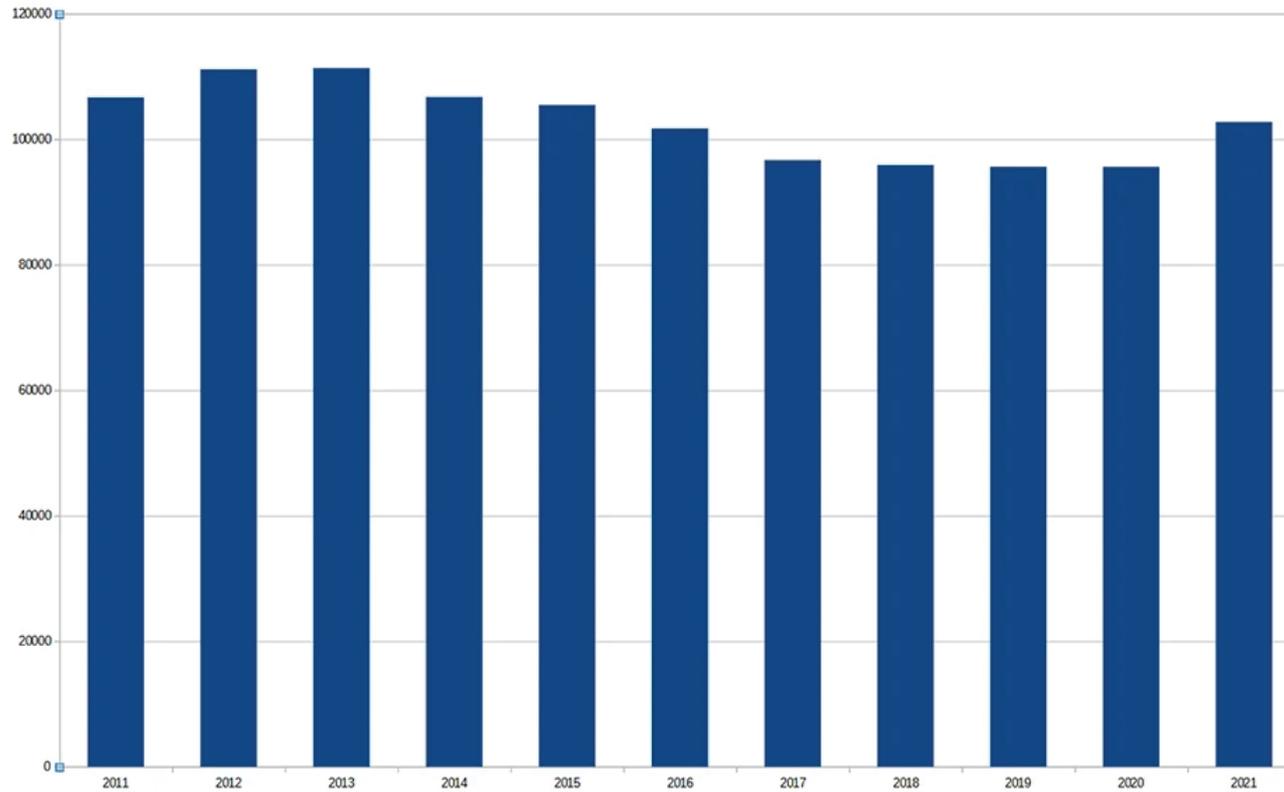




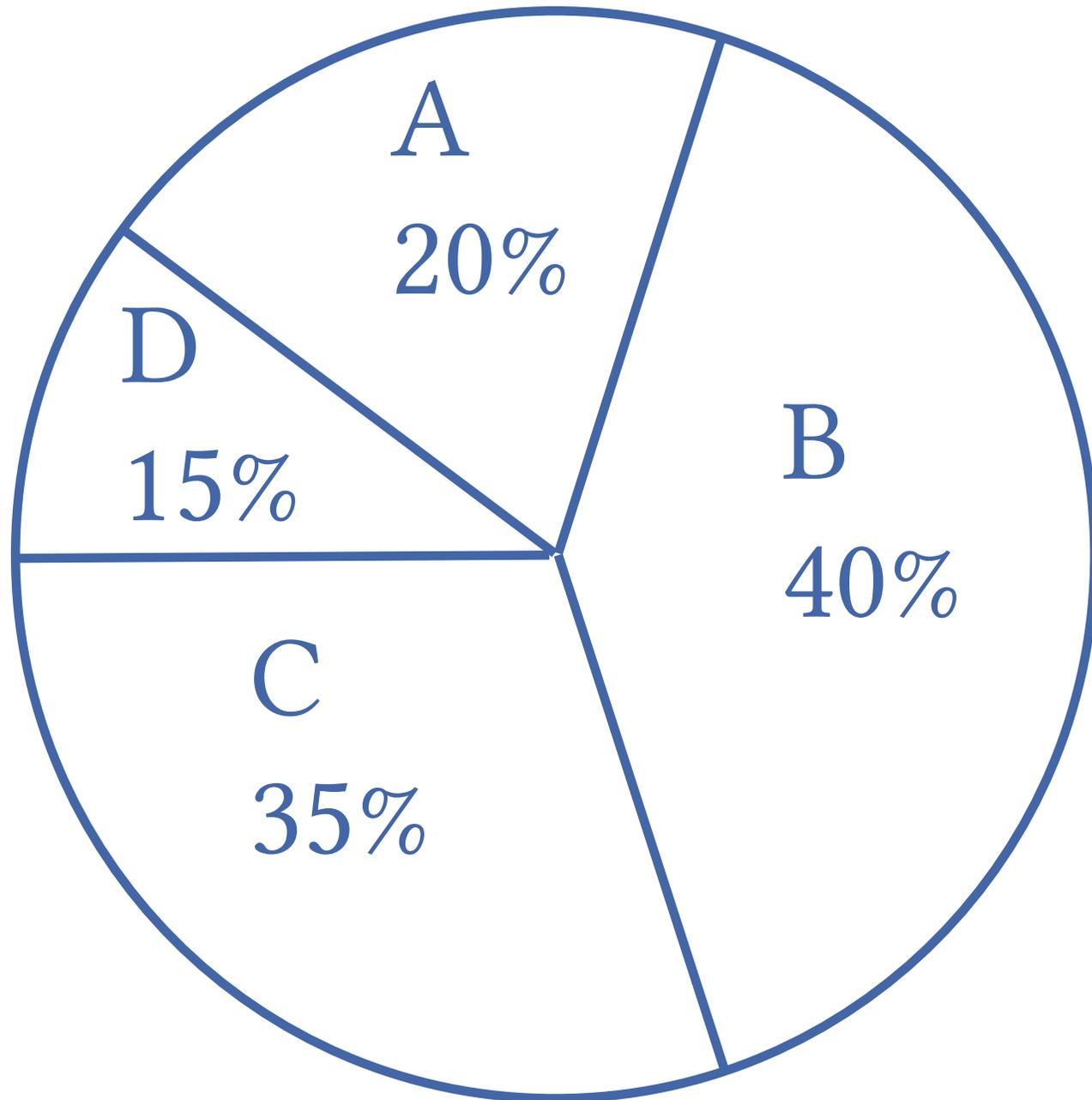
Major and Violent Crime Has Increased



Seven Major Felony Offenses (2011-2021)



What's wrong with this pie chart?

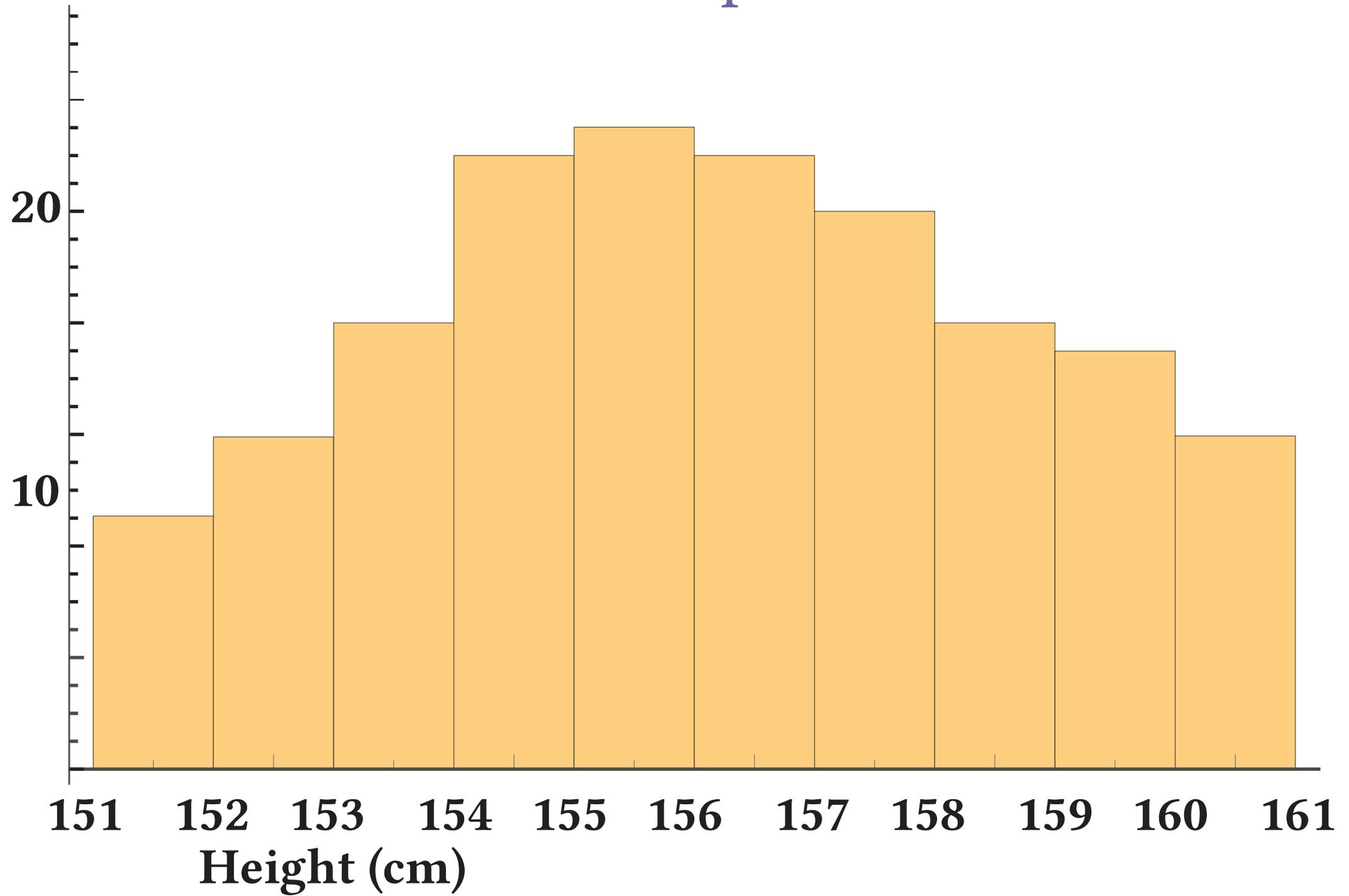


HISTOGRAM

A **histogram** is like a bar graph, but where the horizontal axis is a number line.

Frequency

Example



CLASS INTERVALS

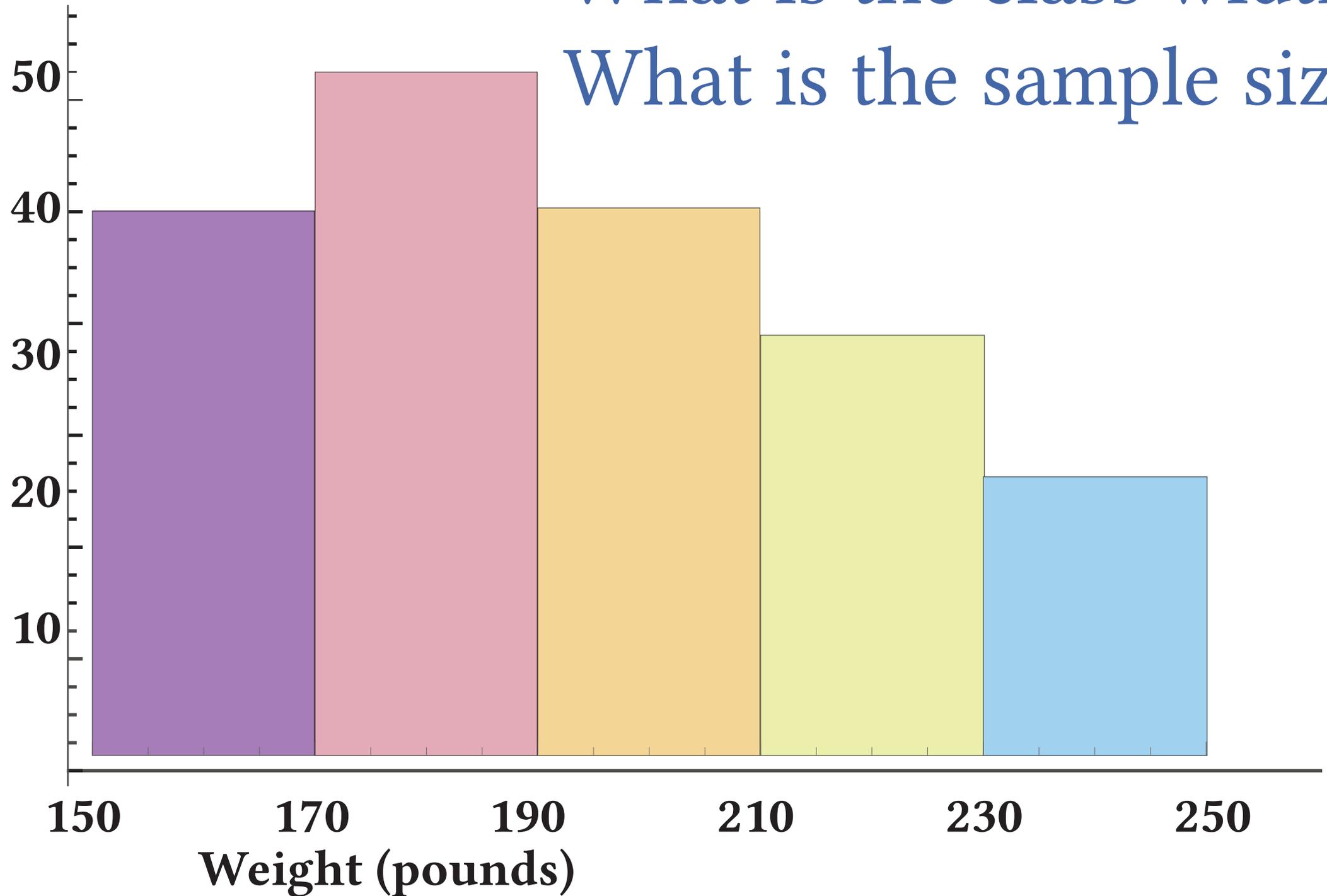
Class intervals are groupings of the data. In general, we define class intervals so that each interval is equal in size.

For example, if the first class contains values from 120-129, the second class should include values from 130-139.

We have somewhere between 5 and 20 classes, typically, depending upon the number of data we're working with.

Frequency

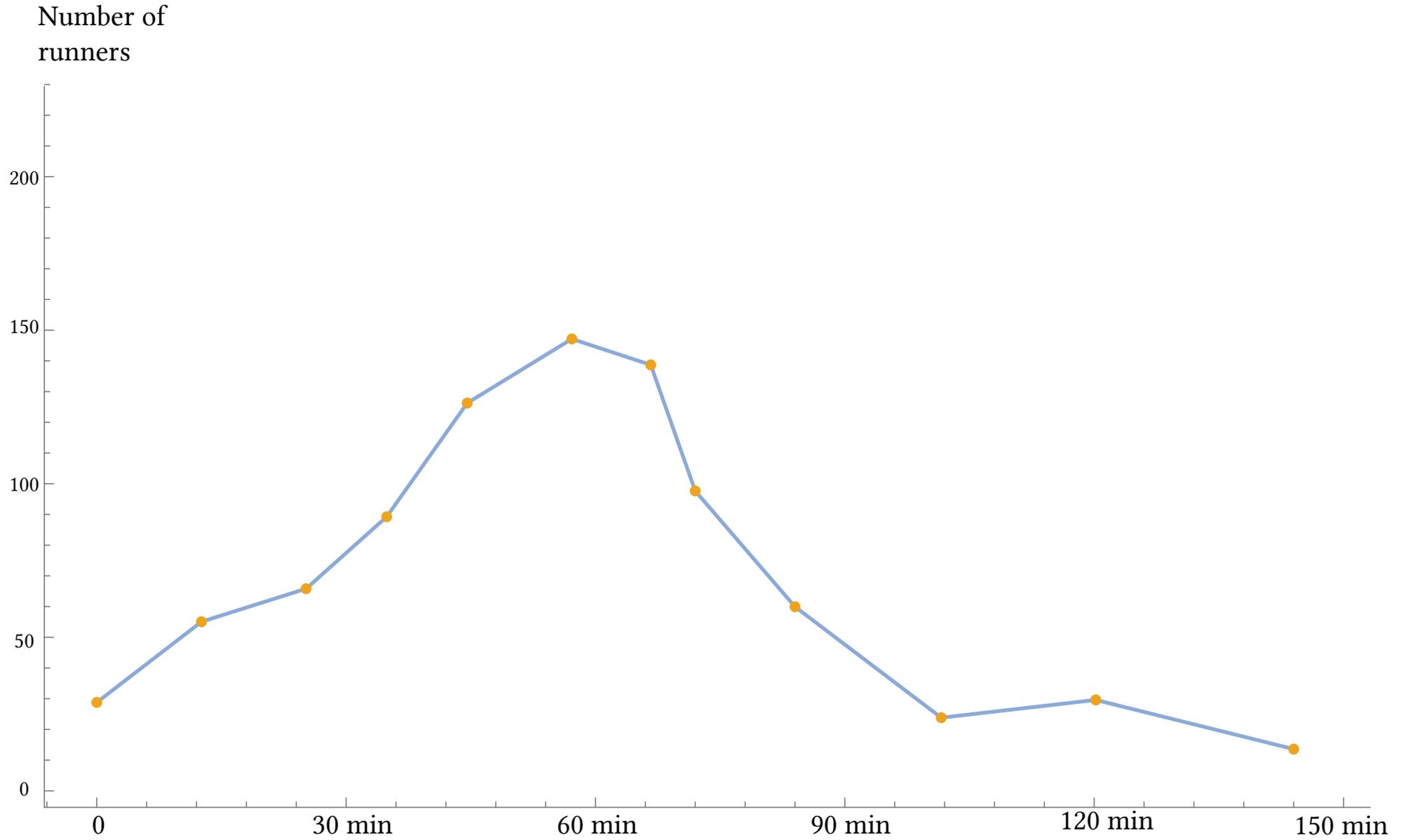
What is the class width?
What is the sample size?



FREQUENCY POLYGON

An alternative representation is a **frequency polygon**. A frequency polygon starts out like a histogram, but instead of drawing a bar, a point is placed in the midpoint of each interval at height equal to the frequency. Typically the points are connected with straight lines to emphasize the distribution of the data.

Example



Question

A tourism agency conducted a survey to analyze the ages of participants in a group travel program. The ages of 30 participants are listed below:

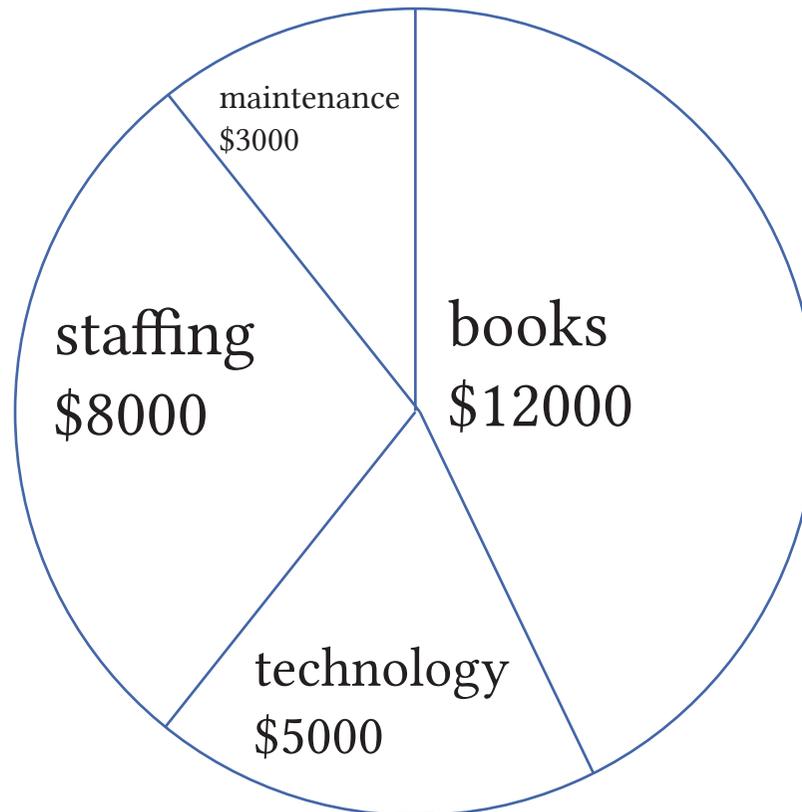
18, 21, 22, 25, 27, 28, 29, 31, 32, 34, 35, 37, 39, 41, 43, 45, 46, 48, 50, 52, 53, 54, 56, 58, 60, 62, 64, 66, 68

Complete the frequency distribution for the data.

<u>Age</u>	<u>Frequency</u>
<u>20-29</u>	
<u>30-39</u>	
<u>40-49</u>	
<u>50-59</u>	
<u>60-69</u>	
<u>70-79</u>	

Question

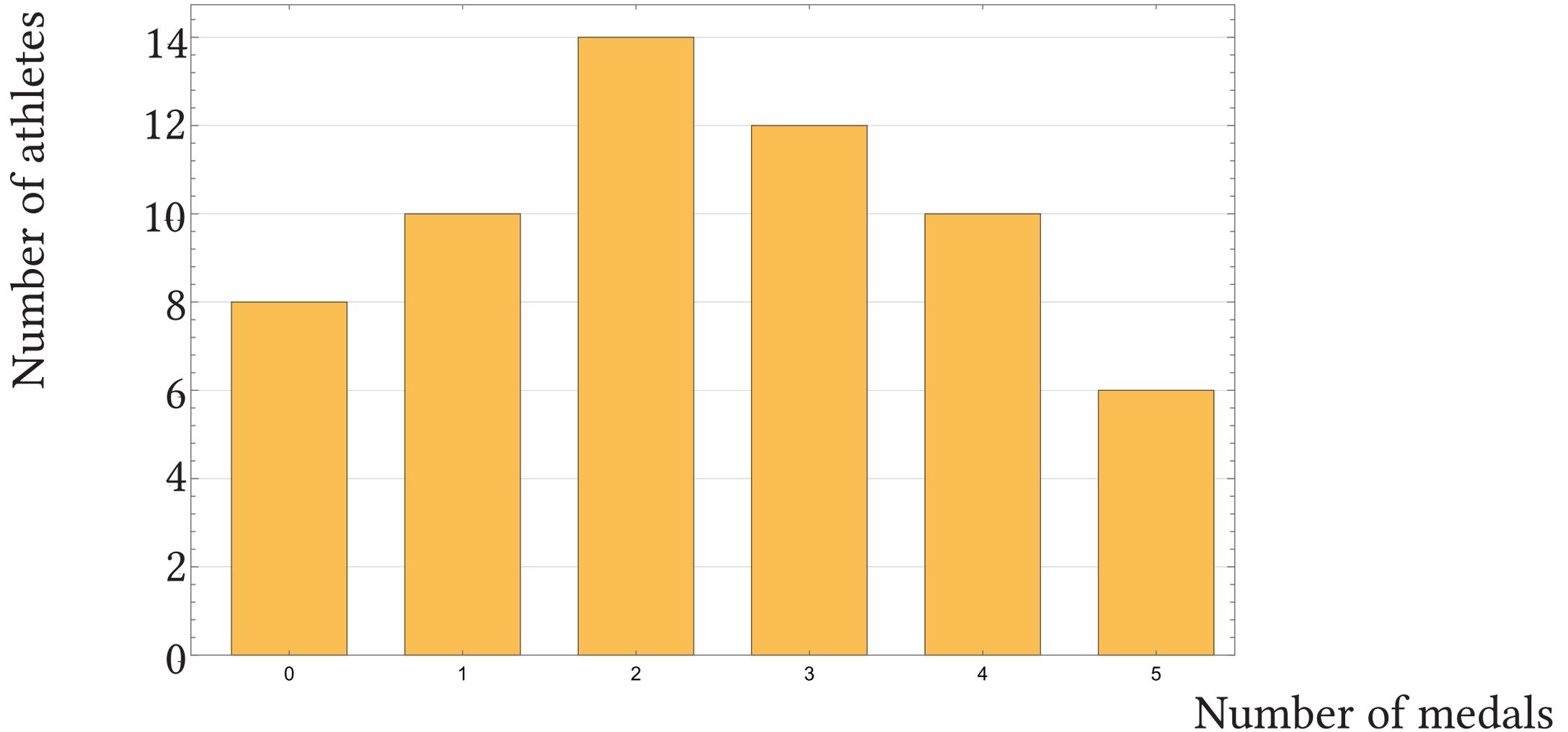
A local library tracks its annual spending in different areas: Books, Technology, Staffing, and Maintenance. For this year, the spending in each category is as follows:



Calculate the percentage of the total budget that was spent on Books.

Question

The data in the figure below represents the number of medals won by 150 athletes in a sports competition.



How many athletes won exactly 2 medals?