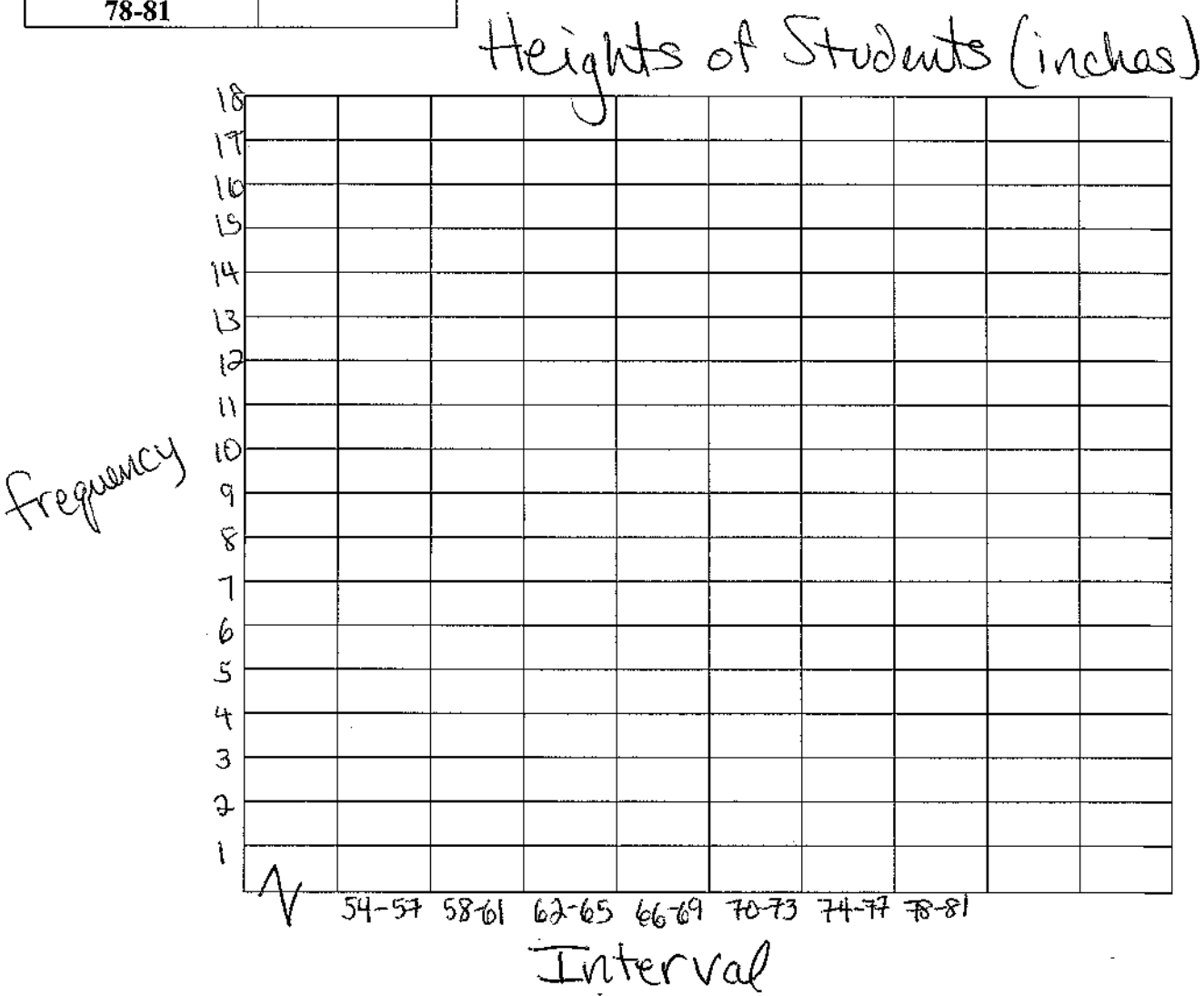
Statistics and Histograms **Name:** Answers

Article: *Are Americans Shrinking?* http://www.digitaljournal.com/article/270441

1) Let's create a histogram using the heights of students in this class!

Interval	Frequency
54-57	
58-61	
62-65	
66-69	
70-73	
74-77	
78-81	



What is a histogram? What are they used for? What is the difference between a histogram and a bar graph?

A histogram is a graph that depicts grouped frequency data in different intervals. Histograms are used to visually show data. Histograms have no gaps between intervals; bar graphs often have gaps & show amounts of distinct categories.

2a) Over the past several years, you have recorded the number of automobiles that a used car dealer in your town has sold in different price ranges. First, decide whether a histogram or a bar graph is most appropriate for this situation.
Next, using the given data, construct an appropriate graph of this situation.

Price Range (intervals)	Number of Cars Sold (frequency)
\$0-\$999	3
\$1,000-\$1,999	5
\$2,000-\$2,999	12
\$3,000-\$3,999	25
\$4,000-\$4,999	40
\$5,000-\$5,999	75
\$6,000-\$6,999	52
\$7,000-\$7,999	35
\$8,000-\$8,999	15
\$9,000-\$9,999	9

85

111

271 total

- What percent of the cars that were sold cost more than or equal to \$5,000? Round.

$$\frac{(75+52+35+15+9)}{271} = \frac{186}{271} = 68.6346\ldots$$

About 69%

- Find the modal interval for the data.

↑ most popular interval

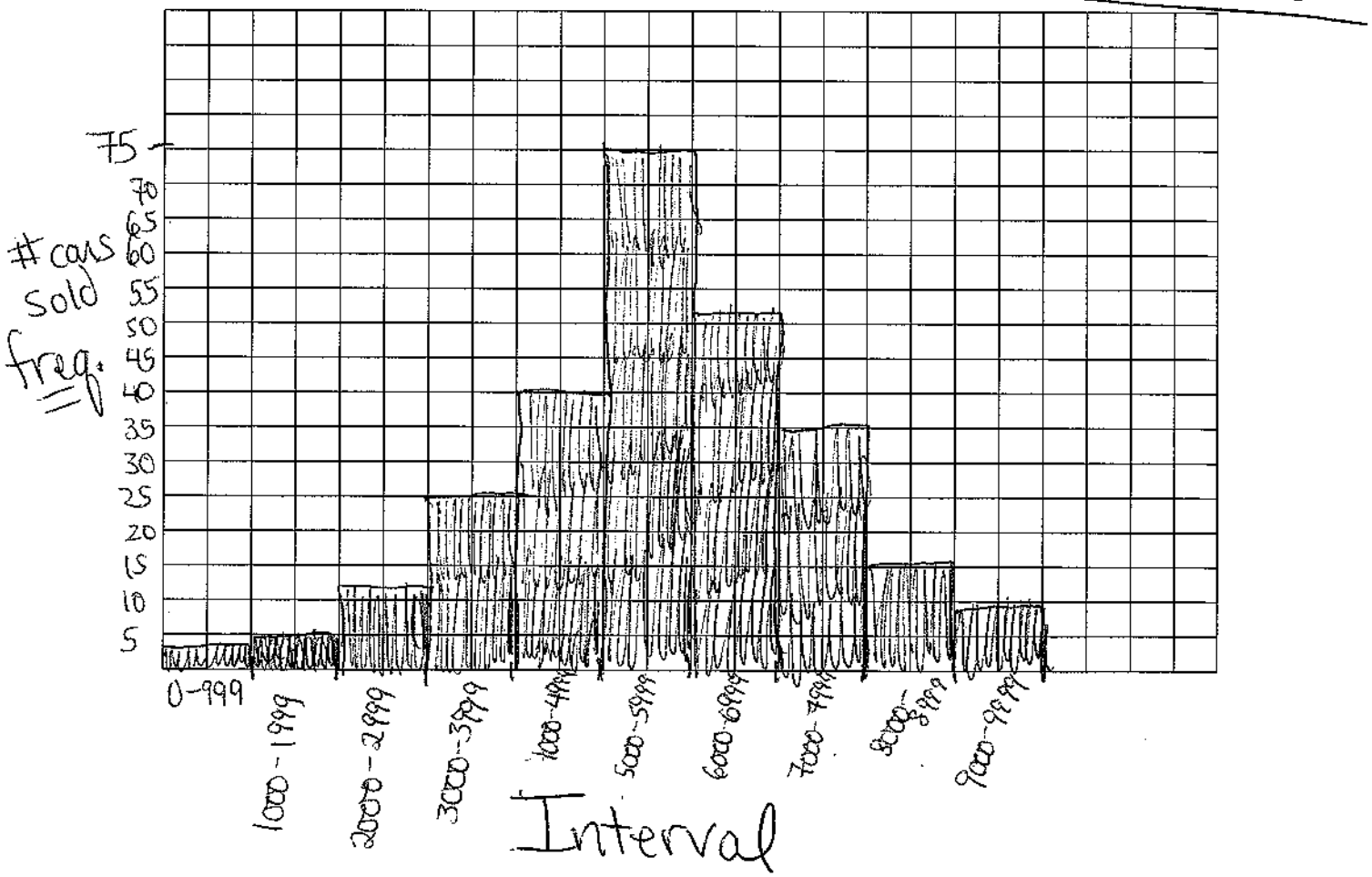
\$ 5000 - 5,999

- Find the median interval (i.e. the interval that contains the median).

\$ 5000 - 5999

- Be sure to clearly label your graph!

Prices of Used Cars Sold (\$)



Cumulative Histograms

2b) We can display the same data in another form, using a cumulative histogram. Use the data from the last table to fill in this cumulative histogram. Round all percents to nearest %.

Price Range (intervals)	Number of Cars Sold (frequency)
$0-$999	3
$0-$1,999	8
$0-$2,999	20
$0-$3,999	45
$0-$4,999	85
$0-$5,999	160
$0-$6,999	212
$0-$7,999	247
$0-$8,999	262
$0-$9,999	271

- How can you check your tables for total accuracy?

  Make sure the final total equals the total in the frequency table.

- What percent of the cars sold cost less than $2,000? Round to nearest %

  $\frac{8}{271} = \frac{8}{271} = 2.952099\%$

- What percent of the cars sold cost less than $5000?

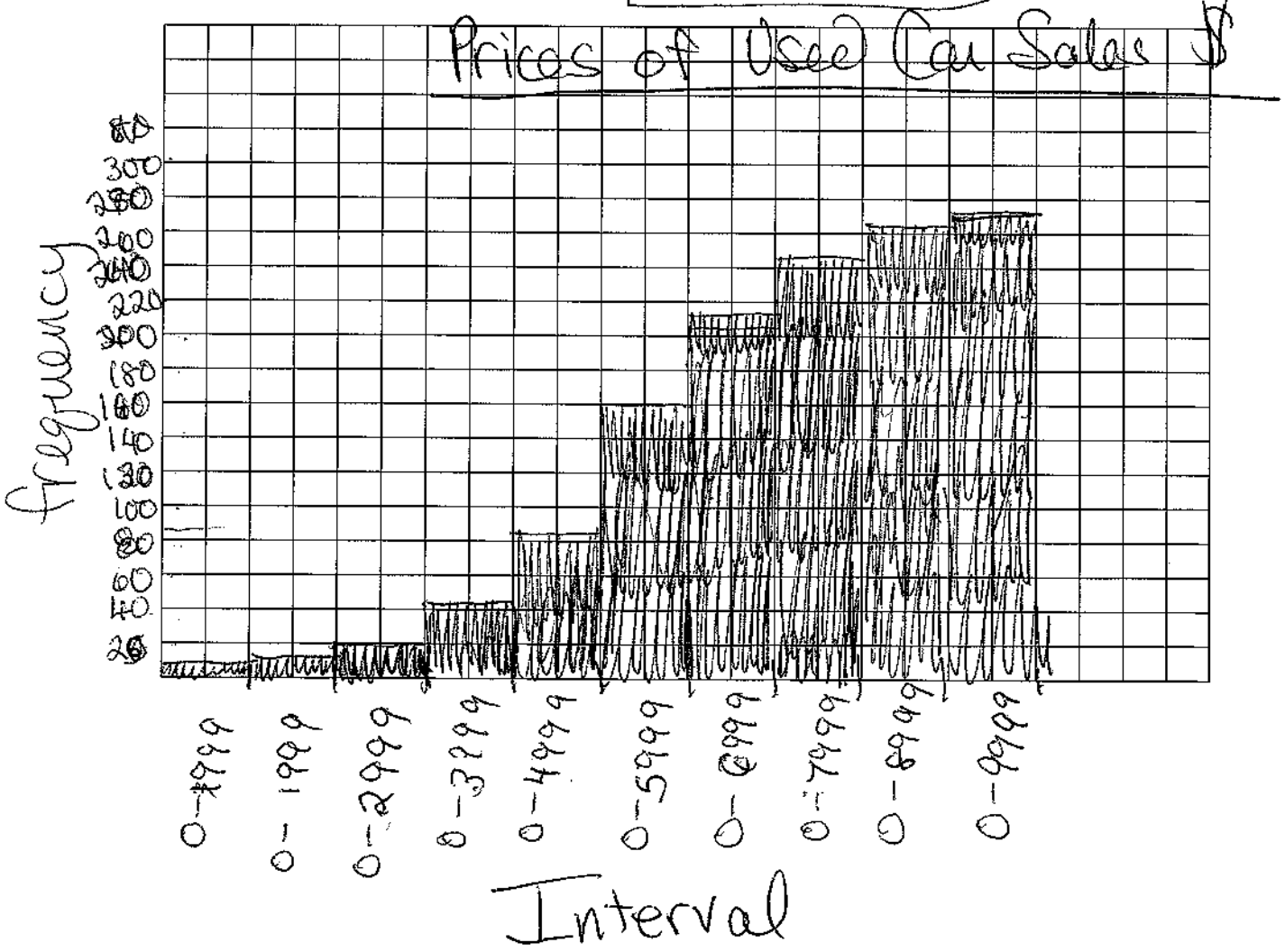
  $\frac{85}{271} \times 100\% = 31.3653$

  31%

- Find the median interval.

  $271 \div 2 = 135.5$

  $5000 - 5999



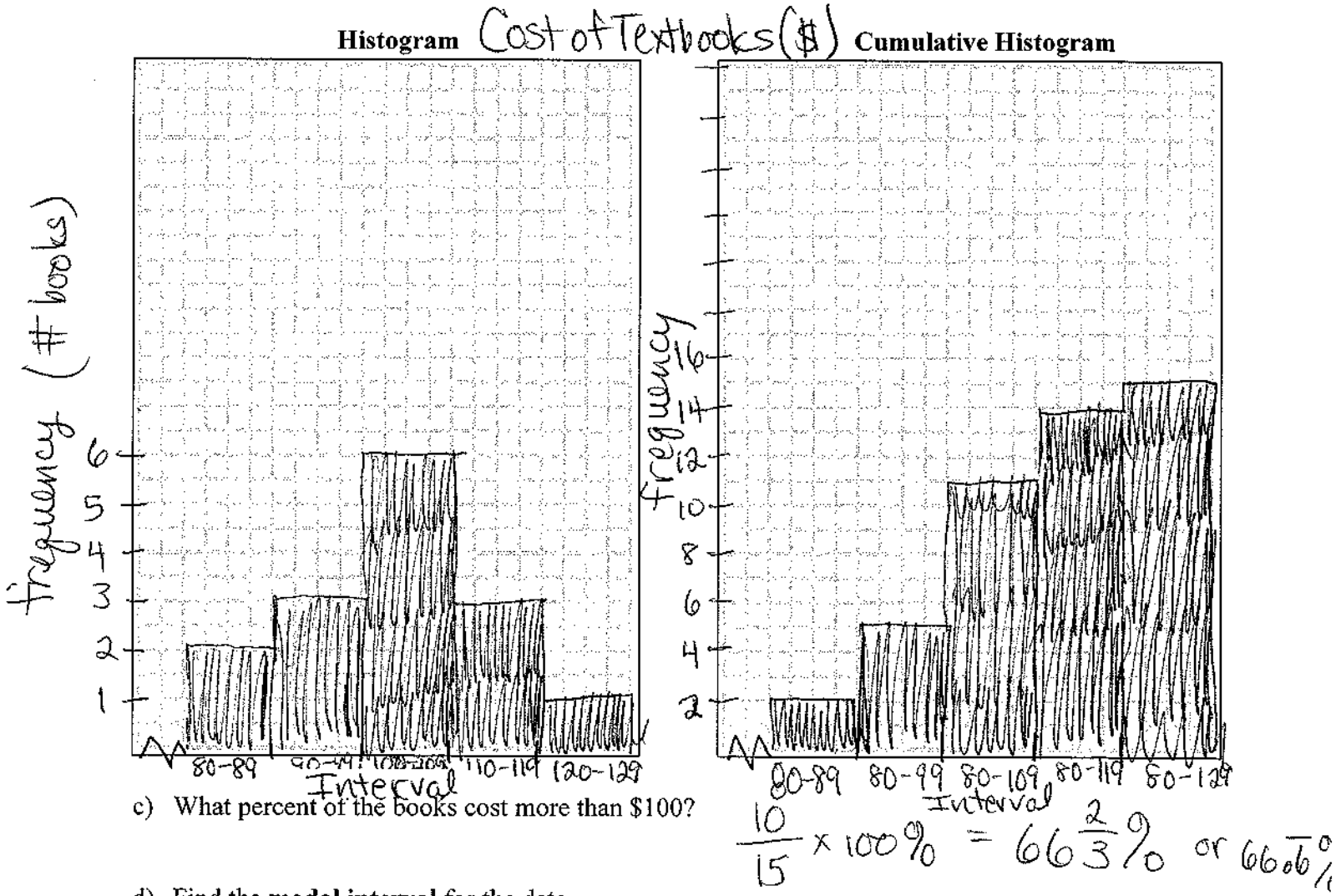
3) College students spent the following amounts of money on textbooks for one math class.
$101, $107, $121, $90, $89, $101, $98, $110, $115, $85, $95, $109, $109, $110, $109

a) Complete the charts below **showing tally, frequency, and cumulative frequency.**

Cost Interval	Tally	Frequency
80-89	II	2
90-99	III	3
100-109	HHT I	6
110-119	III	3
120-129	I	1

Cost Interval	Cumulative Frequency
80-89	2
80-99	5
80-109	11
80-119	14
80-129	15

b) Draw the frequency histogram and the cumulative frequency histogram.



c) What percent of the books cost more than $100?

$\frac{10}{15} \times 100\% = 66\frac{2}{3}\%$ or $66.\overline{6}\%$

d) Find the **modal interval** for the data.

100 - 109

e) Find the **median interval**.

100 - 109