

In Class Exercise #2: Cumulative Frequencies and Histograms

1. “I’ve been on a diet for two weeks, and the only thing I’ve lost is two weeks”¹

The latest craze to hit celebrities and health fanatics alike is the Paleo or Caveman diet. This means only eating items that our hunter-gatherer ancestors had access to; so plenty of fruits, veggies, meat, fish, nuts and seeds, but no grains such as breads and pasta, dairy, or sugar. Long term studies have yet to show whether low-carb diets such as the Paleo are effective in weight management - so the fad maybe waning. Another blow was dealt more recently to hardcore Paleo dieters. Archaeologists discovered a 14,000-year-old bread-making site in Jordan, leading to suggestions that toast could be added to the Paleo Diet².

For 75 self-professed Carboholics, the number of days that they were able to stay on the Paleo diet before falling off the wagon are shown below.

50	51	51	52	52	53	53	54	55	55	56	56	57	57	57
60	60	60	61	62	63	64	65	66	66	68	69	69	70	70
70	70	70	71	71	71	72	73	73	74	75	75	75	78	79
80	80	82	83	87	88	94	95	95	96	99	99	99	99	100
100	101	101	112	112	113	114	115	117	117	120	121	124	124	124

(a) Using six classes, calculate the class width. $\frac{124 - 50}{6} \approx 12.33 \Rightarrow CW = 13$

(b) Complete the table below.

Class Limits	Freq.	Rel. Freq (%)	Mdpt.	LTCF	LTCF (%)
50 – 62	20	26.67%	56	20	26.67%
63 – 75	23	30.67%	69	41	57.33%
76 – 88	8	10.67%	82	51	68%
89 – 101	12	16%	95	63	84%
102 – 114	4	5.33%	108	67	89.33%
115 – 127	8	10.67%	121	75	100%
total:	75 ✓				

- (c) Using the table from part (b), determine the following
- i. There are 20 dieters who fall into the first category. They lasted at most 62 days on the Paleo diet, and account for 26.67% of the respondents.
 - ii. 63 people were able to stay on the diet for at most 101 days.
 - iii. Less than 68% of the Carboholics were able to sustain the Paleo diet for a maximum of 88 days.
 - iv. Exactly 4 Carboholics can be found in the fifth class. These people lasted 102–114 days on the Paleo diet before falling off the wagon. This category represent 5.33% of the participants.

¹https://www.brainyquote.com/quotes/totie_fields_312007

²<https://www.npr.org/sections/thesalt/2018/07/24/631583427/14-000-year-old-piece-of-bread-rewrites-the-history-of-baking-and-farming>

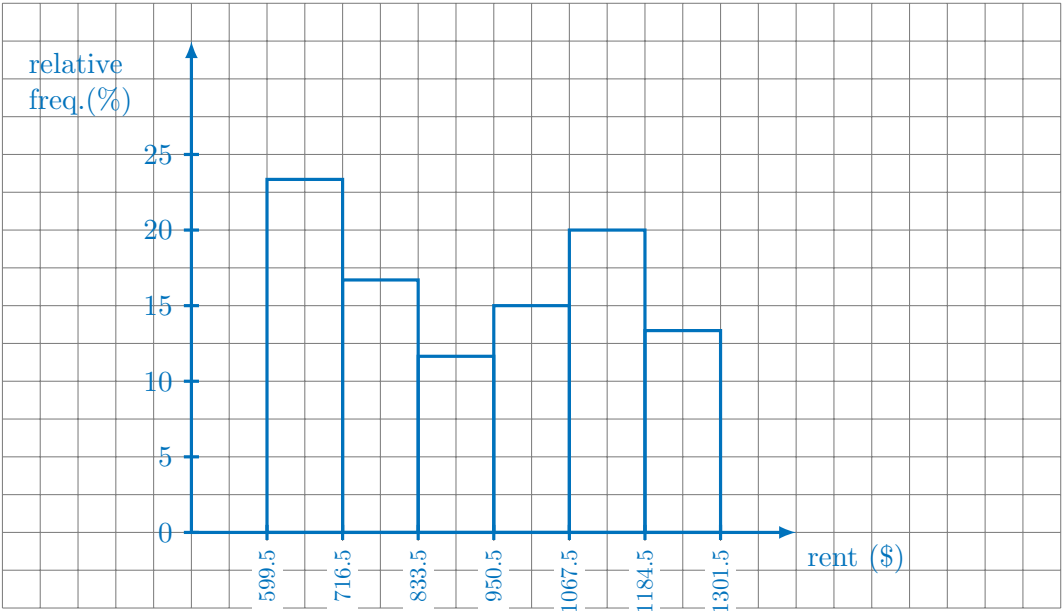
2. The following list shows the monthly rents (in dollars) paid by the inhabitants of a large apartment building.

600	600	600	600	640	670	670	680	680	680	690	690
710	710	720	720	750	760	770	770	770	780	790	810
840	890	910	920	920	930	940	960	970	980	980	990
1020	1020	1020	1060	1080	1090	1100	1110	1120	1130	1140	1140
1160	1160	1160	1180	1190	1220	1230	1270	1280	1280	1290	1300

- (a) Organize the data in 6 classes and complete the following frequency table.
(You do not need to calculate any MTCF(%) values.)
- $$\frac{1300 - 600}{6} \approx 116.67 \Rightarrow CW = 117$$

Class limits	Frequency	Relative Freq.(%)	LTCF	LTCF (%)	MTCF
600 – 716	14	23.33%	14	23.33%	60
717 – 833	10	16.67%	24	40%	46
834 – 950	7	11.67%	31	51.67%	36
951 – 1067	9	15%	40	66.67%	29
1068 – 1184	12	20%	52	86.67%	20
1185 – 1301	8	13.33%	60	100%	8
total:	60 ✓				

- (b) Draw a histogram of the relative frequencies (%).



- (c) Draw an ogive for the LTCF frequencies.

