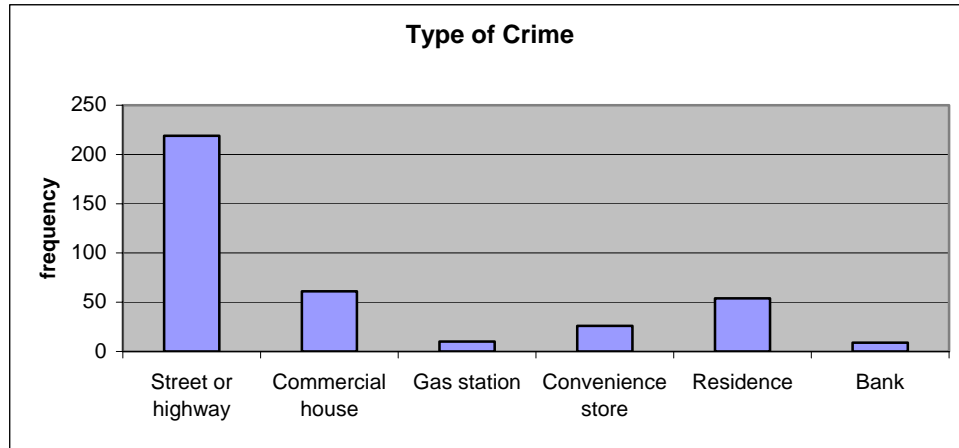


## Mth 120 – Statistics – Practice Exam 1 Solutions

1.
  - a. quantitative
  - b. qualitative
  - c. quantitative
  - d. qualitative
  - e. quantitative
2.
  - a. This could actually be argued either way.
  - b. discrete
  - c. continuous
  - d. discrete
  - e. continuous
3.
  - a. The objective was to determine if adults *felt* it was worth going to war. (Note the distinction – it is not trying to determine *if it was worth it*.)
  - b. The population is not clear – it is most likely *all US adults*.
  - c. The sample is the 524 adults who were polled.
4.
  - a. This is *stratified sampling* – the different groups are the strata.
  - b. This is a *convenience sample* – only people who are interested and listening call in.
  - c. This is *cluster sampling* – the cartons are the clusters.
5.
  - a. the cholesterol level
  - b. the experimental drug What is the treatment?
  - c. completely randomized – double blind  
(either answer would be acceptable)
6.
  - a. about 22,000
  - b. about 18%
  - c. This graph is misleading because the different categories are not the same population. We should use relative frequencies instead.
7.
  - a.

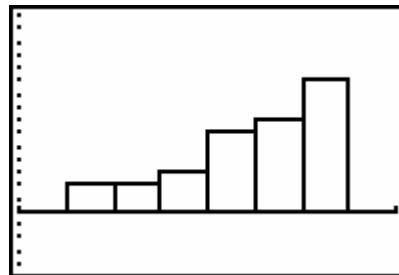
Type of Crime	Number of Offenses (in thousands)	Relative Frequency
Street or highway	219	0.578
Commercial house	61	0.161
Gas station	10	0.026
Convenience store	26	0.069
Residence	54	0.142
Bank	9	0.024

b.



8. There are two good choices for this example – you could do class widths of 10 or 5. Either width shows the grade separation, but a width of 5 better displays the distribution. I'll do this histogram with a width of 5. The picture is actually a screen shot of my calculator. Microsoft Excel's 'histogram' feature doesn't display the histogram correctly, though it can with a bit of tweaking.

class	frequency
40-49	2
50-59	2
60-69	3
70-79	6
80-89	7
90-99	10



9. This distribution is slightly skewed right.

10.

- Since the distribution is reasonably symmetric, the *mean* would be best.
- Since this distribution is skewed, *median* would be best.
- This is qualitative data, so *mode* would be best.

11.

Miles (per day)	Frequency	$x_i$ (mdpt)	$x_i f_i$
1-2.9	3	2	6
3-4.9	30	4	120
5-6.9	17	6	102
7-8.9	21	8	168
9-10.9	7	10	70
	78		466

$$\text{so } \bar{x} \approx \frac{466}{78} \approx 5.97$$

$$12. \text{ gpa} = \frac{4 \cdot 0 + 2 \cdot 1 + 3 \cdot 3 + 3 \cdot 0 + 4 \cdot 1}{4 + 2 + 3 + 3 + 4} = \frac{15}{16} = 0.9375 \approx 0.94$$

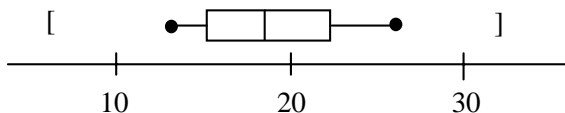
$$13. i = \left( \frac{30}{100} \right) (30 + 1) = \frac{930}{100} = 9.3 \text{ so } P_k = \frac{x_9 + x_{10}}{2} = \frac{63 + 65}{2} = 64$$

$$14. z = \frac{x - \mu}{\sigma} = \frac{112 - 100}{15} = 0.80$$

15.

a.

```
1-Var Stats
n=13
minX=13
Q1=15.5
Med=19
Q3=22.5
maxX=26
```



$$\text{IQR} = 22.5 - 15.5 = 7$$

$$\text{lower fence} = 15.5 - 1.5 \cdot 7 = 5$$

$$\text{upper fence} = 22.5 + 1.5 \cdot 7 = 33$$

b. We can see from the boxplot that there are no outliers – no values are outside of the fences.