Summer Homework for AP Statistics
(Due the 1st day of school)

The purpose of this summer homework is to reach a certain level of familiarity with your graphing calculator. You will have access to your calculator on ALL assignments, tests, and projects this year. It will be your side-kick on your AP Statistics journey and you'll use it nearly every day.

1) **Make a plan for getting an appropriate calculator:** If you do not already own a graphing calculator, my recommendation is to purchase a TI-84 Plus calculator over the summer. If you already have a TI-83 calculator, it will be sufficient 95% of the time. You will be able to use a classroom calculator for the few times that you'll need a TI-84+. If you cannot afford to buy a calculator of your own, talk to your teacher on the first day of school so you can borrow one from the school.

2) **Now learn how to use your calculator:** When you show up on the first day of school (or the second day of school if you need to check one out), I will expect that you will know how to do the following skills. **Consult your manual or a YouTube video if you need to.**

   - Enter data into L1, L2, etc.
   - Calculate simple statistics such as the mean, median, quartiles, and linear regression equation
   - Plot boxplots, scatterplots, and histograms

*By the time you finish this summer homework, you should be familiar with all these skills.*
A) **Learn how to use the STAT Button:** Enter the following data into List 1

i. Select the STAT menu.

ii. Choose “Edit”.

iii. Enter the following data:

```
510  510  510  543  454  438  459  459
498  466  448  403  498  466  498  433
454  454  498  419  415  454  407  498
443  448  498  433  459  459  419  468
```

iv. Do STAT⇒CALC⇒1-Var Stats⇒L1

v. Record the following:

- Mean ______
- Standard Deviation(s) _____
- Median ______
- Quartile 1 ______
- Quartile 3 ______
- Minimum ______
- Maximum ______

B) **Learn how to use STAT PLOT:**

i. Select STAT PLOT (2^nd Y=). Hit Enter to select Plot 1. Toggle cursor to “On” by hitting Enter. Select the fourth plot (a box plot with outliers) by hitting Enter. Your data should be in List 1, so “Xlist” should read “L1”. Frequency should be “1” and you can choose whichever mark you like. Select “Zoom” (3^rd button, top row). Choose option 9 (ZoomStat).

ii. Reproduce the box plot **in scale** here. Use “trace” to find the end of the whiskers, the ends of the box, and the middle line of the box. Label your axis and scale. Choose a scale appropriate for the space provided.
C) **Practice with Linear Regression**: If you are camping in the woods, can you tell what the temperature is by how quickly the crickets chirp?

i. Enter the data below into L2 and L3:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Chirps/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>110</td>
</tr>
<tr>
<td>19</td>
<td>110</td>
</tr>
<tr>
<td>20</td>
<td>130</td>
</tr>
<tr>
<td>21</td>
<td>135</td>
</tr>
<tr>
<td>23</td>
<td>154</td>
</tr>
<tr>
<td>24</td>
<td>158</td>
</tr>
<tr>
<td>26</td>
<td>179</td>
</tr>
<tr>
<td>29</td>
<td>201</td>
</tr>
<tr>
<td>31</td>
<td>210</td>
</tr>
<tr>
<td>32</td>
<td>230</td>
</tr>
</tbody>
</table>

ii. Plot a scatter plot (the first choice in the plots, under STAT PLOT). Reproduce the scatter plot below with labeled axes, scale, and a title. Choose a scale appropriate for the space provided. Remember to change Xlist and Ylist to L2 and L3!
iii. Now find the line of best fit using the commands:

\[ \text{STAT} \Rightarrow \text{CALC} \Rightarrow 8: \text{LinReg}(a+bx) \Rightarrow L2,L3 \]

Record the equation of the line __________________

and \( r \) _____ and \( r^2 \) ______
(turn Diagnostics On if your calculator doesn’t show \( r \) and \( r^2 \))

iv. At \( 27^\circ \), what would you expect the number of chirps/minute to be (don’t forget context and units)?