AP Statistics Project: The "Digital Footprint" Deep Dive

Welcome to AP Statistics! This course is fundamentally different from any math class you have taken before. Instead of just calculating numbers, we focus on what those numbers *mean* and how they tell a story about the world around us. To prepare you for the analytical thinking required this year, you will complete a rapid data collection and analysis project.

Project Goal: You will extract exactly **30 pre-existing data points** from your own digital history or a public secondary source, analyze the data using technology, and communicate your findings visually and mathematically.

Phase 1: Selecting Your Variable & Retroactive Data Collection

Instead of tracking data forward for a month, you will conduct a "data audit" to pull **exactly 30 consecutive data points** from a recent time period (e.g., the last 30 days, the last 30 songs, or the last 30 text messages).

You must choose **one quantitative variable** to analyze. A quantitative variable is something that can be measured or counted numerically, where averaging the values makes mathematical sense.

Approved Data Sources & Variables:

- **Screen Time Audit:** Your phone's daily screen time (in minutes) for the last 30 consecutive days.
- **Music/Streaming Analytics:** The length (in seconds) of the last 30 songs you listened to on Spotify/Apple Music.
- **Digital Text Analysis:** The character count or word count of your last 30 sent text messages.
- **Fitness Tracker History:** Daily step counts or active calories burned from the past 30 days stored on a fitness app/smartwatch.
- **Secondary Source Option:** If you do not wish to use personal data, you may use the last 30 games of your favorite sports team (points scored) or the past 30 days of daily high temperatures for our town.

⚠️ **Note:** Avoid variables that have the exact same value every time (e.g., your graduation year) or categorical variables (e.g., app type like "Social Media" vs. "Game").

Phase 2: Technology & Statistical Analysis

All data analysis for this project must be performed using a physical **TI-84 (or equivalent) graphing calculator** or the **GraphNCalc app**. Learning to navigate this technology is a core requirement of the AP Exam.

Step 1: Enter Your Data

Press the **STAT** button, select **1:Edit...**, and input your 30 data points into list **L1**.

Step 2: Calculate Summary Statistics

Press **STAT**, arrow over to the **CALC** menu, and select **1:1-Var Stats**. Ensure your List is set to **L1** and press **Calculate**. Use the output to identify the following required metrics:

- **Mean $\bar{x}$:** The arithmetic average of your data.
- **The 5-Number Summary:** Minimum (Min), First Quartile (Q_1), Median (Med), Third Quartile (Q_3), and Maximum (Max).

Step 3: Check for Outliers Mathematically

In AP Statistics, an outlier must be mathematically proven using the 1.5 X IQR rule:

1. Calculate your Interquartile Range:

   $IQR = Q_3 - Q_1$

2. Calculate your boundaries:
   - **Lower Boundary:** Q_1 - (1.5 X IQR)
   - **Upper Boundary:** Q_3 + (1.5 X IQR)

Any data point in your log that falls below the lower boundary or above the upper boundary is a confirmed mathematical outlier.

Phase 3: The Final Deliverable

You will present your findings on a single-page digital infographic, poster, or slide (using Google Slides, Canva, or similar software). Your deliverable must contain the following four distinct sections:

- **Introduction:** State the variable you chose, where you sourced the data, and the units of measurement.
- **The Data & Visuals:** Include a clean, organized table of your 30 raw data points. You must also include a clear screenshot or photo of your graphing calculator screen showing a **Histogram** or a **Box Plot** of your data.

- **Statistical Summary:** Clearly display the Mean, Median, and your step-by-step mathematical outlier calculations. State explicitly whether your data contained any outliers.
- **Written Reflection:** In 4–6 sentences, describe the "story" of your data. Is the distribution symmetrical or skewed? Did your data represent a typical snapshot of your life, or were there confounding factors (such as a weekend, a holiday, or a special event) that influenced your numbers?

Project Rubric (50 Points Total)

Criteria	Target (Full Points)	Points
Data Integrity Log	Exactly 30 consecutive days of quantitative data clearly listed with appropriate context/units.	**10 pts**
Calculator Visuals	Includes a clear, legible screenshot or photo of a statistical plot generated via a graphing calculator or the GraphNCalc app.	**10 pts**
Mathematical Analysis	Accurately calculates Mean, Median, IQR, and correctly applies the 1.5 times IQR outlier rule with all work shown.	**15 pts**
Statistical Reflection	Contextualizes the data well. Correctly utilizes introductory vocabulary (shape, center, spread) to describe patterns or real-world anomalies.	**10 pts**
Formatting & Polish	The final deliverable is structured professionally, easy to read, and presented as a single-page infographic or slide layout.	**5 pts**

Due Date: This assignment must be uploaded to Schoology before the second class.