Name: _____   Date: _____

Data Detectives: Spotting Signal from Noise for 4th Grade

Constructing visual representations from raw numbers goes beyond plotting points to uncovering hidden environmental and rhythmic patterns in the world.

---

1. Imagine you are tracking how the local honeybee population changes over five years. Which method would be most effective for synthesizing this data to show a long-term trend?

    A.   Writing a poem about the bees' behavior
    B.   Creating a line graph to visualize the change over time
    C.   Keeping all the raw notes in a messy pile
    D.   Recording the sound of the bees buzzing

2. When a scientist collects measurements that are very different from the rest of the group, these unusual data points are known as _____.

    A.   Averages
    B.   Outliers
    C.   Constants
    D.   Medians

3. If a website has a lot of bright colors and professional photos, it is guaranteed that the data they provide is 100% accurate.

    A.   True
    B.   False

4. You find two maps showing rainfall in the Amazon Rainforest. Map A is from a logging company, and Map B is from a non-partisan university research team. Why might the data look different?

    A.   One map uses more colorful ink than the other
    B.   Different organizations may have different biases or goals
    C.   Rainfall cannot actually be measured
    D.   Calculators always make mistakes with rain

5. To keep digital research organized and safe from being lost, a student should use a consistent _____ strategy for their digital folders.

    A.   Coloring
    B.   Encryption
    C.   File-naming
    D.   Deleting

6. Data literacy includes 'Ethical Use,' which means you must give credit to the original source when using someone else's statistics.

    A.   True

    B.   False

7. If you wanted to compare the average height of 4th graders in Japan versus 4th graders in Brazil, which data gathering method would be most 'reliable'?

    A.   Asking one friend from each country
    B.   Guessing based on photos in a magazine
    C.   Using a global health database with thousands of samples
    D.   Measuring the tallest person in each class only

8. A student conducting a survey about favorite lunches only asks their 5 best friends. This is an example of a _____ sample size.

    A.   Perfect
    B.   Biased
    C.   Massive
    D.   Universal

9. Which of these is a form of 'Metadata' (data that describes other data) for a digital photograph?

    A.   The tree shown in the image
    B.   The price of the camera used
    C.   The GPS coordinates of where the photo was taken
    D.   The person who is viewing the photo

10. When interpreting a graph, it is important to check the 'Scale' on the side because changing the numbers can make a small difference look huge.

    A.   True
    B.   False