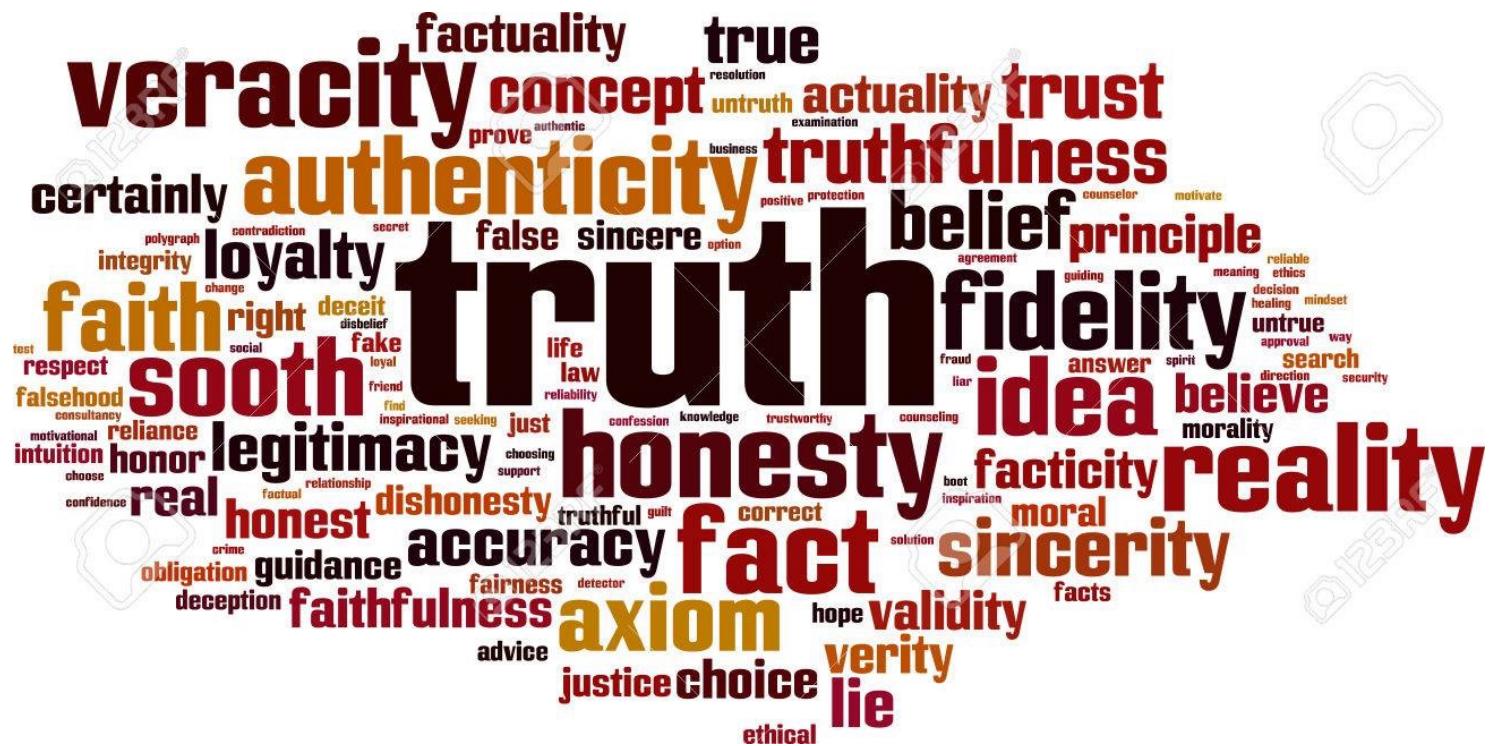


# Truth and the Investigative Process



# Discussion

What have you heard recently regarding truth/facts from news, media, friends, etc.?

- List any buzz words or phrases you have come across.
- We are not looking to start a debate, just to brainstorm issues that have been raised.

# Organize the words from most true to least true.

- Objectively true
- Subjective
- Absolute truth
- Relatively true
- Directly observed
- Inferred/deduced
- Opinion
- Biased
- Unbiased
- law
- theory
- Fact
- Claim
- Hypothesis
- Proven
- Self-evident
- Valid
- Reliable
- Statistically true

# Scientific Truth

Naomi Oreskes: Why We Should Trust Scientists | TEDTalks

<https://www.youtube.com/watch?v=RxyQNEVOEIU>

# Statistical Truth

- When we say something is statistically true, we typically mean that it is true *on average* or is *inferred* to be true.
- **True on average:** Generally true; the outcome that happens most often but may not happen every time.
  - e.g., Car MPG, Men are taller than women
- **Inferred to be true:** Deduced to be true via statistical tests.
  - e.g., human-caused climate change is inferred to be true because statistical models that include human effects fit the data better than ones that don't.

# The Statistical Investigative Process

*Statistics is a problem-solving and decision making process that is fundamental to scientific inquiry and essential for making sound decisions. - GAISE (2016)*

1. Formulate questions.
2. Collect data.
3. Analyze data.
4. Interpret results.

# Are You a Data Detective?



Data detectives use PPDAC

# Classwork

- Find an article or video that mentions/uses/is about statistics.
- Be prepared to share with the class.