

What do we see from Earth?

Sun



Moon



Lunar Eclipse



Milky Way



Constellation Orion



Mars



Where is Earth?

the Local Supercluster

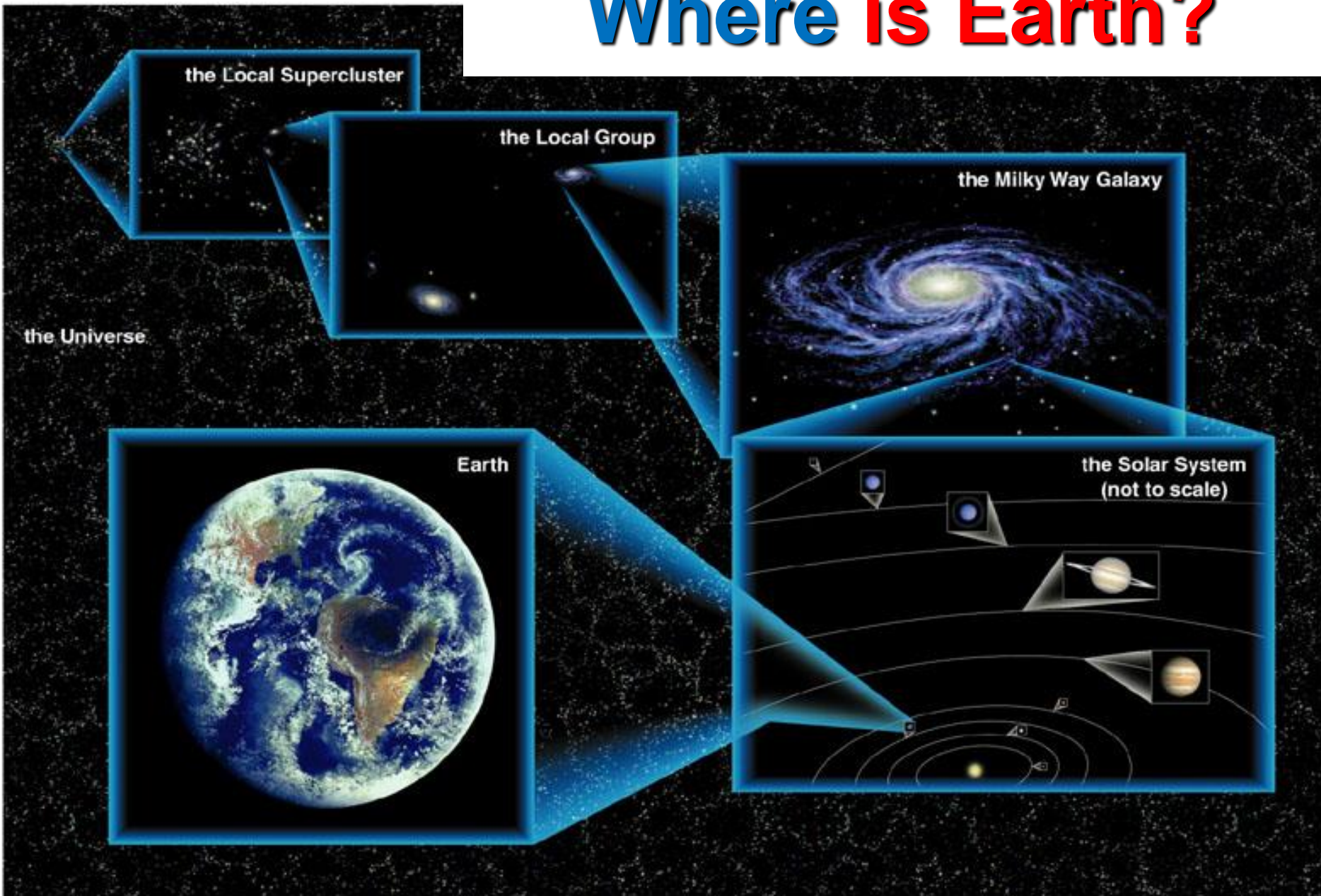
the Local Group

the Milky Way Galaxy

the Universe

Earth

the Solar System
(not to scale)



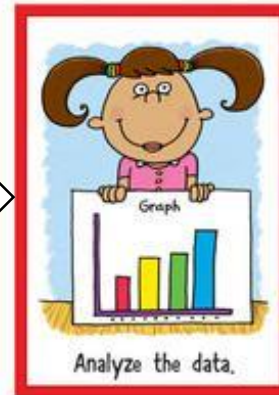
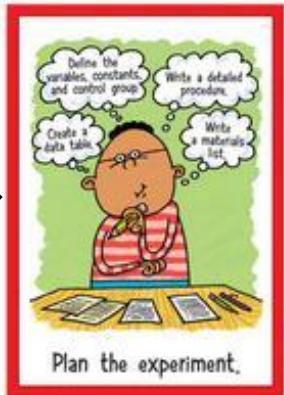
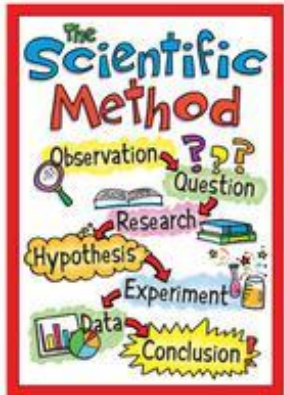
INITIAL OBSERVATION



WONDER

RESEARCH

HYPOTHESIZE

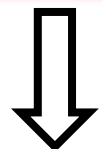


PLAN

EXPERIMENT
ADDITIONAL
OBSERVATIONS

DATA

ANALYSIS



CONCLUSION!

Observation



- Observation is describing an object or event using your five senses (*what you see, hear, smell, taste, touch*) or measurement (*numbers*).
- Information gathered during an observation is called **data** (sing. *datum*).

Observation **does not include opinion**
(how you *feel* or what you *think*)!

Describe the Elephant



It weighs 480 kilograms.

It has large ears and long trunk.

It has gray wrinkly skin.

~~**It is very cute!**~~

It is young.

It is about 1.5 yards tall.

Qualitative vs Quantitative Data

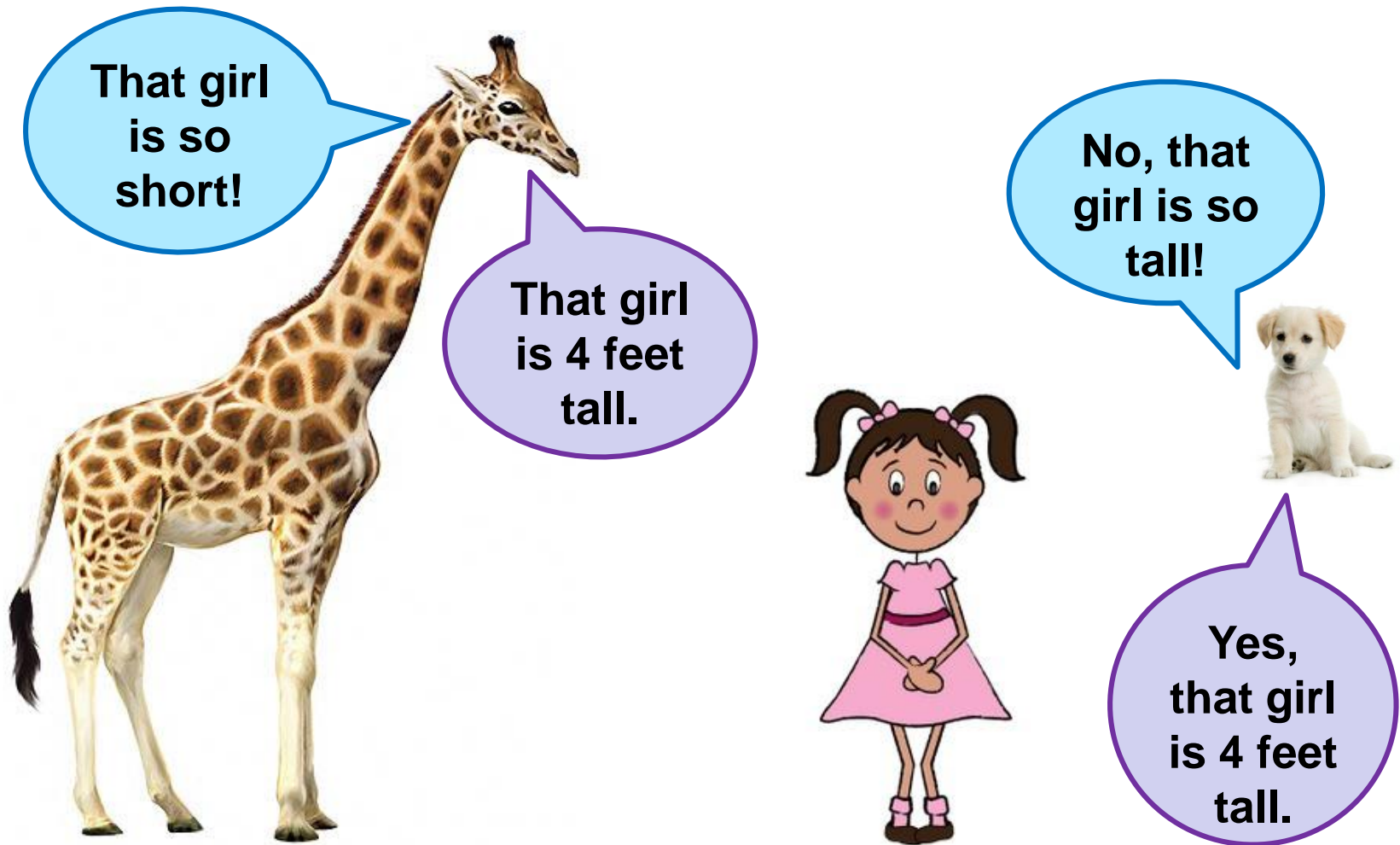
Qualitative (letters)

- **Descriptions** using **words**.
- Data which can be **observed** but **not measured**.
- What the object is *like*: texture, smell, taste, appearance, etc.
- ***Subjective, relative***

Quantitative (numbers)

- Specific **numbers**.
- Data which can be **measured**.
- Length, height, area, volume, weight, speed, time, temperature, humidity, sound levels, cost, age, etc.
- ***Objective, specific***

Qualitative observations are **subjective**



Quantitative observations are **objective**