

Name _____



Observation – Inference – Prediction

Purpose: To practice distinguishing between observations, inferences and predictions.

Scientists spend a great deal of time observing the natural and built world. When a scientist **observes** he or she *takes in information using the five senses*. Often **tools** such as microscopes are used to extend the senses and make the observations more precise and accurate.

Observations may be **qualitative** or **quantitative**. Qualitative observations are those *that describe qualities, properties or characteristics of objects or phenomena*. Color, texture, smells, sounds are all examples of qualitative observations. Quantitative observations are those that can be measured in numbers. Mass, volume, speed, temperature are a few examples. Tools are often used to make quantitative observations.

Observations in science should always be **facts** (a statement that can be proven true or false), not **opinions** (an expression of a person's feelings that cannot be proven).

Observations lead to **inferences**. An inference is an educated guess or *reasonable conclusion drawn from the observation*. It is a possible explanation for the observation.

Predictions can be made from inferences. A scientific prediction is an educated guess *about a future event*. It can be made without knowing whether it is correct; it may be an incorrect guess. That's ok. Scientists learn from incorrect guesses as much as correct ones.

For example, a student wakes up to thunder one morning.

He may **observe** the thunder – using his sense of hearing, he made a factual, qualitative observation.

The sound of the thunder led to the **inference** that it was raining – it might not have been raining.

The student then **predicted** that they would not go outside during school that day because of the rain.

Look at the photo below and use it to make one observation, one inference and one prediction:



Observation -

Inference -

Prediction -

Read the following sentences carefully. Identify if the sentence is an observation (O), an inference (I) or a prediction (P). Record your answer on the line to the left of the sentence.

1. _____ It must have rained because the grass is wet.
2. _____ It is 95 degrees today.
3. _____ Today is Friday, so I think we will have fish sticks in the cafeteria for lunch.
4. _____ The fish swim to the top of the aquarium when I come near.
5. _____ The fish expect food when I come near the aquarium.
6. _____ The river is flowing very fast.
7. _____ The blowing sand in the desert will wear away the rocks.
8. _____ The mountain is making rumbling noises deep inside.
9. _____ The mountain is a volcano.
10. _____ The volcano is going to erupt soon.

Qualitative vs. Quantitative

Read the following examples and then decide if each statement is Qualitative (QL) or Quantitative (QNT).

1. _____ The candy was sour.
2. _____ The bug was 5 cm long.
3. _____ The flower is red.
4. _____ The mass of the beaker was 122 g.
5. _____ My fingernail is 2 cm long.
6. _____ The slug was slimy.
7. _____ The laptop is white.
8. _____ She is 150 cm tall.
9. _____ His hair is black.
10. _____ You have 3 sisters.

Use the cartoon to the right to answer below:

Make your own Quantitative Observation -

Make your own Qualitative Observation -

Inference - what is the dog thinking? Write it in the speech bubble above.

