

# Observing

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▼ All human beings share a desire to explore and understand the world around us. Science developed out of this curiosity. Science is based on empiricism—a search for knowledge based on experimentation and observation. Sometimes observations are made directly with the human senses. Sometimes technological devices, such as microscopes, are used to help. Scientists believe that without meaningful observations based on thoughtful use of experience, the evidence or data needed to understand a problem will be incomplete.

There are two basic types of observations—*qualitative* and *quantitative*. Qualitative observations describe and quantitative observations measure. Scientists usually try to use quantitative observations because they are more precise. Thoughtful observation communicates. It is clear and detailed and it takes practice. The following activities will give you a chance to practice making clear, thoughtful observations.

# Inferring

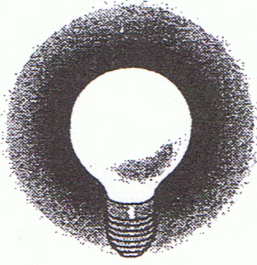
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▼ The world is a lot more enjoyable when the things that happen around us are understandable. When we observe patterns that are similar or events that remind us of experiences we've had previously, a new experience can be appreciated more fully. The explanations we use to depict events we experience are often called *inferences*. Inferences are based on observations and are simply explanations of observations. The ability to infer helps us make sense of our environment.

The only rule of inferring is to be logical. Inferences are always tentative. They are not final explanations of an observation. Sometimes there are several logical inferences for a given observation and you cannot be sure which inference best explains the observation. In such instances, you will need additional information. Inferences are often changed when new observations are made.



# Making Inferences



Read the following observations. Then make inferences that explain each observation. Remember, there may be more than one logical explanation.

**Observation 1:** You observe that the sky at noon is darkening.

Your inference: \_\_\_\_\_

**Observation 2:** The principal interrupts class and calls a student from the room.

Your inference: \_\_\_\_\_

**Observation 3:** All middle school students are bringing lunch from home.

Your inference: \_\_\_\_\_

**Observation 4:** A former rock-and-roll band member has poor hearing.

Your inference: \_\_\_\_\_

**Observation 5:** You leave a movie theater and see that the street is wet.

Your inference: \_\_\_\_\_

**Observation 6:** During a handshake, you feel that the palm of the individual's hand is rough and hard.

Your inference: \_\_\_\_\_

**Observation 7:** The classroom lights are off.

Your inference: \_\_\_\_\_

**Observation 8:** A siren is heard going past the school.

Your inference: \_\_\_\_\_

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