1. In order to make observations, an observer must always use
(1) experiments
(2) the senses
(3) proportions
(4) mathematical calculations

2. Using a ruler to measure the length of a stick is an example of
(1) extending the sense of sight by using an instrument
(2) calculating the percent of error by using a proportion
(3) measuring the rate of change of the stick by making inferences
(4) predicting the length of the stick by guessing

3. In the classroom during a visual inspection of a rock, a student recorded four statements about the rock. Which statement about the rock is an observation?
(1) The rock formed deep in the Earth's interior.
(2) The rock cooled very rapidly.
(3) The rock dates from the Precambrian Era.
(4) The rock is black and shiny.

4. An interpretation based upon an observation is called
(1) a fact
(2) an inference
(3) a classification
(4) a measurement

5. Which statement about an unidentified rock sample is most likely an inference?
(1) The rock is composed of large crystals.
(2) The rock has shiny, wavy mineral bands.
(3) The rock is a metamorphic rock.
(4) The rock has no visible fossils.

6. Which statement about a major hurricane is an inference?
(1) The windspeed is measured at 200 km/hr.
(2) The central air pressure is recorded at 946.0 mb.
(3) A rain gauge records three inches of rain in less than one hour.
(4) Damage from the storm is expected to be extensive.

7. A person observes a sediment consisting of clay, sand, and pebbles and then states that this material was transported and deposited by an agent of erosion. This statement is
(1) a fact
(2) a measurement
(3) an inference
(4) an observation

8. While walking on a glacier, an observer makes several statements. Which statement is an inference?
(1) "Some of the snow on this glacier is powdery."
(2) "The rocks on this glacier are of different sizes."
(3) "There are many cracks in this glacier."
(4) "Some parts of this glacier will start melting this spring."
1. **Scientific Notation** - used for showing extremely large or small numbers by multiplying or dividing by powers of ten.

Example 1:  \[ 1609 \text{ meters} = 1.609 \times 10^3 \text{ m} \]

Example 2:  \[ 0.000008 \text{ meters} = 8.0 \times 10^{-6} \text{ m} \]

**Practice:**

Convert to scientific notation.

1) 45,700  
2) 0.009  
3) 0.9  
4) 24,212,000  
5) 0.000665  
6) 21.9  
7) 0.00332  
8) 321

Convert to expanded form.

9) \[ 3.825 \times 10^3 \]  
10) \[ 6.3 \times 10^4 \]  
11) \[ 2.3 \times 10^{-2} \]  
12) \[ 1.2 \times 10^{-1} \]  
13) \[ 1.8 \times 10^2 \]  
14) \[ 8.1 \times 10^{-4} \]