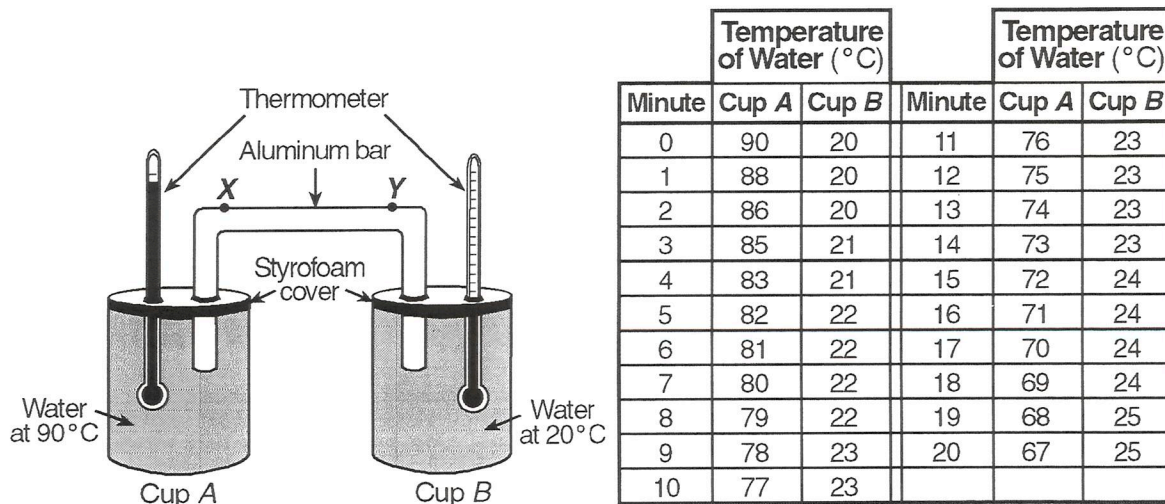Name: _____

1) A student incorrectly measured the volume of a mineral sample as 63 cubic centimeters. The actual volume was 72 cubic centimeters. What was the student's approximate percent deviation (percentage of error)?

   A) 9.0%   B) 14.2%   C) 12.5%   D) 15.3%

2) A student incorrectly measured the volume of a mineral sample as 83 cubic centimeters when the actual volume was 89 cubic centimeters. What was the student's approximate percent deviation (percentage of error)?

   A) 14.8%   B) 6.7%   C) 7.2%   D) 9.3%

3) Ocean tides are *best* described as

   A) unpredictable and noncyclic   C) predictable and cyclic
   B) unpredictable and cyclic   D) predictable and noncyclic

4) Hot water at 90DC is poured into cup *A*. Cool water at 20DC is poured into cup *B*. Styrofoam covers are placed on the cups. An aluminum bar and a thermometer are placed through holes in each cover. Points *X* and *Y* are locations on the aluminum bar. The data table shows temperature readings taken every minute for 20 minutes.

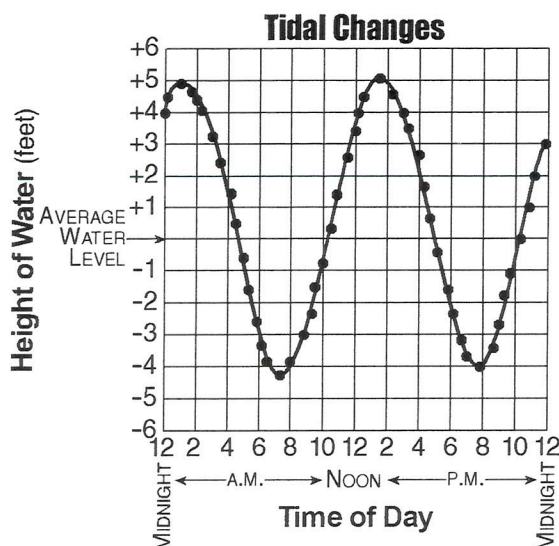| Minute	Temperature of Water (°C)		Minute	Temperature of Water (°C)	
	Cup *A*	Cup *B*		Cup *A*	Cup *B*
0	90	20	11	76	23
1	88	20	12	75	23
2	86	20	13	74	23
3	85	21	14	73	23
4	83	21	15	72	24
5	82	22	16	71	24
6	81	22	17	70	24
7	80	22	18	69	24
8	79	22	19	68	25
9	78	23	20	67	25
10	77	23			

What was the approximate rate of temperature change for the water in cup *A* for the first 10 minutes?

   A) 0.77 CD/min   B) 13.0 CD/min   C) 7.7 CD/min   D) 1.3 CD/min
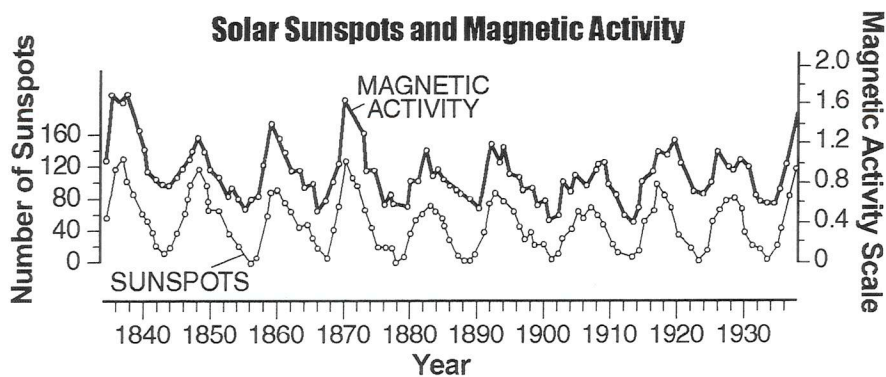
Questions 5 and 6 refer to the following:

The graph below shows the recorded change in water level (ocean tides) at a coastal city in the northeastern United States during 1 day.

Tidal Changes

5)   Which inference about tides is *best* made from the given graph?

A)   The rate of tidal change is greatest at high tide.   C)   The tidal change is cyclic.
B)   The hourly rate of tidal change is always the same.   D)   The tidal change is a random event.

6)   According to the pattern shown on the given graph, the next high tide will occur on the following day at approximately

A)   12:30 a.m.   B)   3:15 a.m.   C)   4:00 a.m.   D)   2:00 a.m.
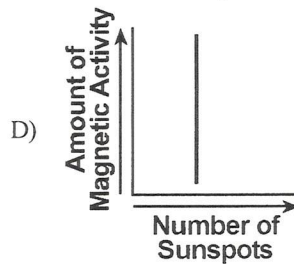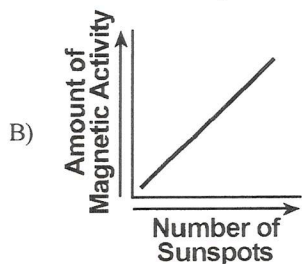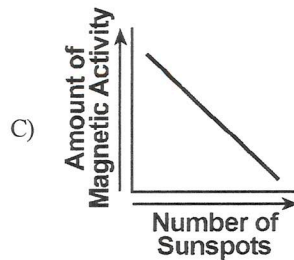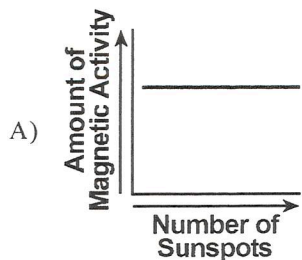
Questions 7 and 8 refer to the following:

The graph below shows changes in the Sun's magnetic activity and changes in the number of sunspots over a period of approximately 100 years. Sunspots are dark, cooler areas within the Sun's photosphere that can be seen from Earth.

Solar Sunspots and Magnetic Activity

7)   The graph indicates that years having the *greatest* number of sunspots occur

A)   precisely at the beginning of each decade
B)   in a cyclic pattern, repeating approximately every 11 years
C)   in a cyclic pattern, repeating approximately every 6 years
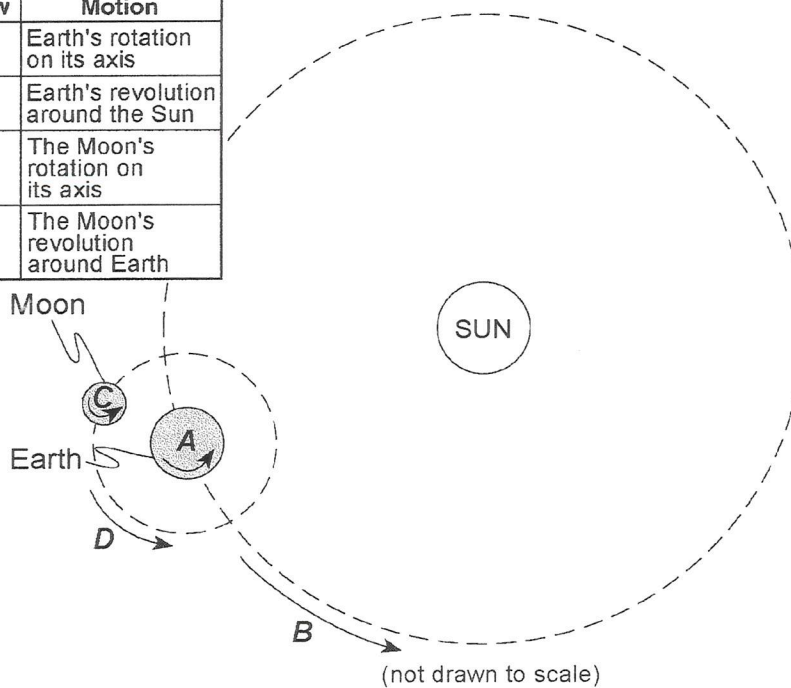D)   randomly and unpredictably

8) Which graph *best* represents the relationship between the number of sunspots and the amount of magnetic activity in the Sun?

A)

Amount of Magnetic Activity

Number of Sunspots

C)

Amount of Magnetic Activity

Number of Sunspots

B)

Amount of Magnetic Activity

Number of Sunspots

D)

Amount of Magnetic Activity

Number of Sunspots

9) The diagram below has lettered arrows showing the motions of Earth and the Moon.

KEY:

Arrow	Motion
A	Earth's rotation on its axis
B	Earth's revolution around the Sun
C	The Moon's rotation on its axis
D	The Moon's revolution around Earth

Moon

SUN

Earth

D

A

C

B

(not drawn to scale)

The lettered arrows in the diagram represent motions that are

A) cyclic and predictable

C) noncyclic and predictable

B) noncyclic and unpredictable

D) cyclic and unpredictable

10) A number of objects are grouped on the basis of common properties. What is this process called?

A) measurement   B) observation   C) inference   D) classification

11) An interpretation based upon an observation is called

A) a classification   B) an inference   C) a measurement   D) a fact

12) A classification system is based on the use of

A) instruments to observe properties of objects

B) inferences to make observations

C) observed properties to group objects with similar characteristics

D) the human senses to observe properties of objects

13) A measurement is best defined as

A) an interpretation based on theory
B) an inference made by using the human senses
C) a direct comparison with a known standard
D) a group of inferred properties

14) Which property was probably used to classify the substances below?

Group *A*   Group *B*
water   aluminum
gasoline   ice
alcohol   iron

Group *C*
water vapor
air
oxygen

A) state (phase) of matter
B) abundance within the Earth
C) specific heat
D) chemical composition

15) Which statement about a cumulus cloud seen over Syracuse, N.Y., is an inference?

A) The cloud formed over Lake Ontario.
B) The cloud has an irregular shape.
C) The cloud appears white.
D) The base of the cloud is determined to be 2.6 km above ground.

16) Which statement about a burning candle is most likely an inference?

A) The candle wax is melting.
B) The wick gets shorter as the candle burns.
C) The flame is yellow.
D) Carbon dioxide and water vapor are produced by the burning.

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1) C   2) B   3) C   4) D   5) C

6) D   7) B   8) B   9) A   10) D

11) B   12) C   13) C   14) A   15) A

16) D