

Lab Skills 2 Star

Name: _____

Date: _____

1. To locate a specimen on a prepared slide with a compound microscope, a student should begin with the low-power objective rather than the high-power objective because the
 - A. field of vision is smaller under low power than under high power
 - B. field of vision is larger under low power than under high power
 - C. specimen does not need to be stained for observation under low power but must be stained for observation under high power
 - D. portion of the specimen that can be observed under low power is less than the portion that can be observed under high power

2. A student designed an investigation to determine the effect of temperature on the rate of seed germination. The student placed moist filter paper in each of four culture dishes. Ten bean seeds were placed on the filter paper in each dish. The four dishes were numbered and placed in the dark at different temperatures as follows: Dish 1: 10°C, Dish 2: 15°C, Dish 3: 20°C, Dish 4: 25°C. The total number of germinated seeds in each culture dish was counted each day for two weeks.

Which data table is best for recording the results of this investigation?

A.

Petri Dish	Day	Temperature	Amount of Light
1			
2			
3			
4			

B.

Petri Dish	Amount of Water	Number of Germinated Seeds	Amount of Light
1			
2			
3			
4			

C.

Day	Temperature			
	Dish 1	Dish 2	Dish 3	Dish 4

D.

Day	Number of Germinated Seeds			
	10°C	15°C	20°C	25°C

3. The diagram below shows a student heating some test tubes with chemicals in them during a laboratory activity.



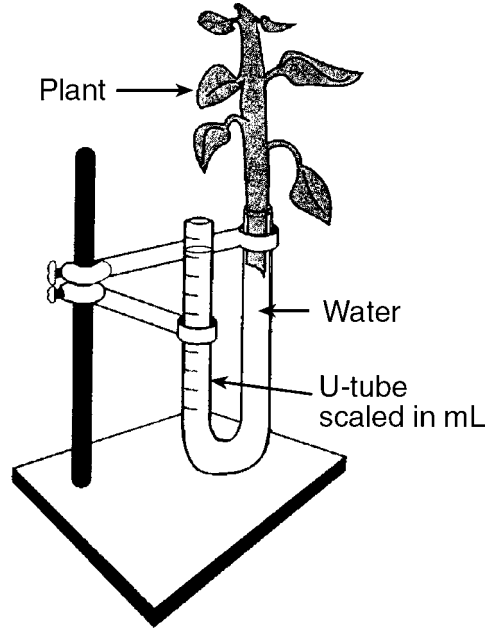
Explain why putting stoppers in the test tubes could be dangerous.

4. To test the effect of hormones on plant growth, six potted plant seedlings of the same species were measured and then sprayed with auxin (a growth hormone). After four weeks of growth under ideal conditions, the plants were measured again. To set up a proper control for this experiment, the investigator should

- A. spray the same plants with different amounts of auxin
- B. spray auxin on six plant seedlings of the same species and grow them in the dark for four weeks
- C. wash the auxin off three of the plants after two weeks
- D. grow another six plant seedlings of the same species under the same conditions, spraying them with distilled water only

5. Base your answer(s) to the following question(s) on the information, diagram, data table, and on your knowledge of biology.

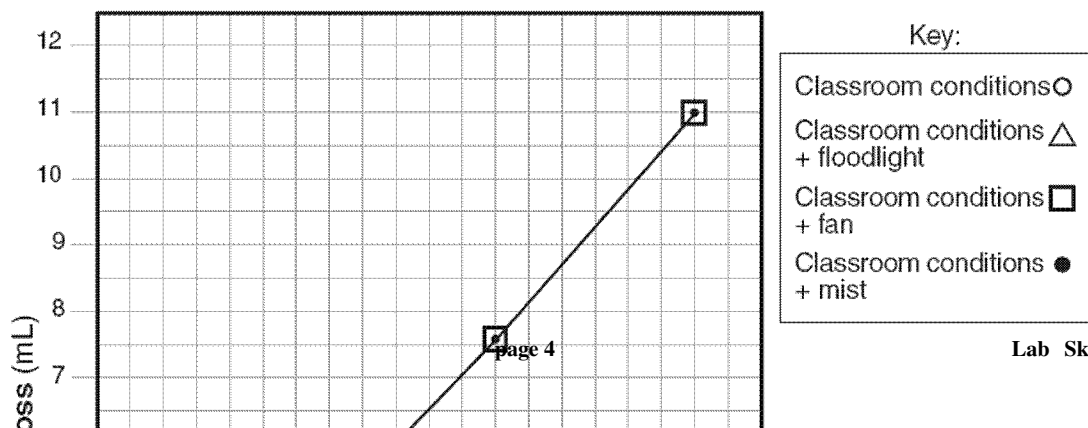
A student conducted an investigation to determine the effect of various environmental factors on the rate of transpiration (water loss through the leaves) in plants. The student prepared 4 groups of plants. Each group contained 10 plants of the same species and leaf area. Each group was exposed to different environmental factors. The apparatus shown in the diagram was constructed to measure water loss by the plants over time in 10-minute intervals for 30 minutes. The results are shown in the data table.



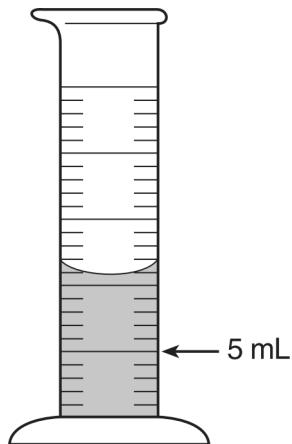
Environmental Factors	Average Total Water Loss in mL Over Time			
	0 min	10 min	20 min	30 min
Classroom Conditions	0.0	2.2	4.6	6.6
Classroom Conditions + Floodlight	0.0	4.2	7.6	11.7
Classroom Conditions + Fan	0.0	4.5	7.6	11.0
Classroom Conditions + Mist	0.0	1.3	2.4	3.7

Using the information in the data table, construct a line graph on the grid, following the directions. The data for fan and mist conditions have been plotted for you.

Average Total Water Loss in mL Over Time



6. How much water should be removed from the graduated cylinder shown below to leave 5 milliliters of water in the cylinder?



- A. 6 mL B. 7 mL C. 11 mL D. 12 mL

7. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

A biology student was given three unlabeled jars of pond water from the same source, each containing a different type of mobile unicellular organism: euglena, ameba, and paramecium. The only information the student has is that the ameba and paramecium are both heterotrophs and the euglena can be either heterotrophic or autotrophic, depending on its environment.

Which procedure and resulting observation would help identify the jar that contains the euglena?

- A. Expose only one side of each jar to light. After 24 hours, only in the jar containing euglena will most of organisms be seen on the darker side of the jar.
- B. Expose all sides of each jar to light. After 48 hours, the jar with the highest dissolved carbon dioxide content will contain the euglena.
- C. Over a period of one week, determine the method of reproduction used by each type of organism. If mitotic cell division is observed, the jar will contain euglena.
- D. Prepare a wet-mount slide of specimens from each jar and observe each slide with a compound light microscope. Only the euglena will have chloroplasts.

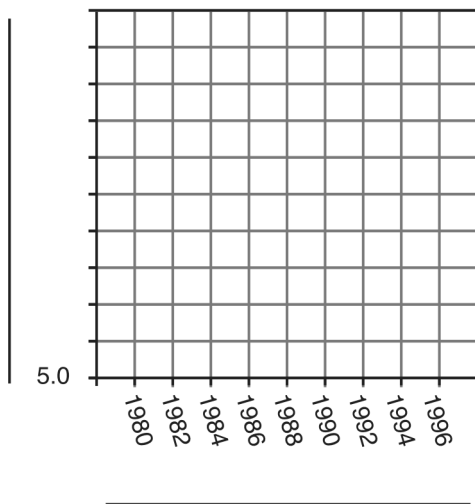
8. Base your answer(s) to the following question(s) on the information and data table below and on your knowledge of biology.

The table shows data collected on the pH level of an Adirondack lake from 1980 to 1996.

Lake pH Level

Year	pH Level
1980	6.7
1984	6.3
1986	6.4
1988	6.2
1990	5.9
1992	5.6
1994	5.4
1996	5.1

Lake pH Level from 1980 to 1996



Identify one factor that should have been kept constant each time water samples were collected from the lake.

9. Base your answer to the following question on the information below and on your knowledge of biology.

A student states that exercise will affect the number of times a person can squeeze a clothespin in a certain amount of time. An experiment is carried out to test this hypothesis. One group of ten students sits quietly before squeezing a clothespin as many times as possible during a one-minute interval. A second group of ten students does 25 jumping jacks before squeezing a clothespin as many times as possible during a one-minute interval.

State *one* way the experiment could be improved in order to increase the validity of the results.

10. A coverslip should be used for preparing a
- A. frog for dissection
 - B. solution of iodine for food testing
 - C. wet mount of elodea (a simple plant)
 - D. test to determine the pH of a solution

1.
Answer: B
2.
Answer: D
3.
Answer: The stoppers would pop out of the heated tubes and possibly injure someone.
4.
Answer: D
5.
Answer: The group of plants in classroom conditions was the control.
6.
Answer: A
7.
Answer: D
8.
Answer: water depth, time of year, weather conditions, or same site
9.
Answer: increase the number of students in each group; repeat the experiment several times.
10.
Answer: C