

Biology 10
Lab Practical 1 Answer Key
Thursday Section

1. What was your initial hypothesis for why the water levels on the shores of Lake Merritt were changing?

Possible answers include trash being dumped in the lake, rainfall patterns (or lack of rainfall and evaporation), tidal influence, human use of the lake water for irrigation.

2. What caused the water level in Lake Merritt to change?

The tides, since it is connected to SF Bay.

3. What is the volume of water in this graduated cylinder, in mL? In liters?

400 mL; 0.4 L

4. What does the m stand for in mL?

Milli-

5. What is $\frac{1}{4}$ expressed as a decimal?

0.25

6. What is $\frac{1}{4}$ expressed as a percentage?

25%

7. In the Lake Merritt experiment, we graphed the water level on the shore of Lake Merritt against time. What variable went on the y-axis (the dependent variable)?

Water level

8. In the Lake Merritt experiment, we graphed the water level on the shore of Lake Merritt against time. What variable went on the x-axis (the independent variable)?

Time

9. In our experiment in which we touched the tip of a thin glass tube to the surface of water, why was water sucked up the tube against the force of gravity?

Capillarity

10. What is the property of water that causes surface tension?

Cohesion, or the formation of H bonds between water molecules

11. Is this solution an acid or a base?

Base

12. Say the pH of the solution is 10. How much more basic is a solution with a pH of 10?

100 times more

13. In lab, we tested for the presence of buffers in solution. How do buffers affect pH?

Buffers prevent the pH from changing

14. Why are buffers important in an organism's cells?

Cells are very sensitive to changes in pH; if the pH were to change without buffers present, key proteins would be denatured and the organism would die.

15. Why don't fish freeze to death in the winter in lakes in cold climates?

Because lakes freeze from the top down (due to ice being less dense than liquid water), therefore there is still liquid water underneath the layer of ice where fish can live.

16. What is the word for how spread out molecules are?

Density

17. What kind of bond forms between water molecules next to each other?

Hydrogen

18. Is this microscope in the correct start position?

No, the stage is not fully lowered, the 40x objective lens is in place, and the light is not on the lowest setting.

19. When changing the objective lens from 40x to 10x, does the field of view get bigger or smaller?

Bigger

20. What is the total magnification of this microscope as it is set up?

100x (10x times 10x)

21. What are the monomers of carbohydrates?

Monosaccharides

22. What type of organic molecule is cellulose?

Polysaccharide, complex carb, or carbohydrate

23. What is the molecular formula of glucose?

$C_6H_{12}O_6$

24. Is glucose a monosaccharide, disaccharide, or polysaccharide?

Monosaccharide

25. A candy bar with 100 Calories per serving on the nutrition label has how many actual calories in it (hint: what is the difference between a calorie with a lowercase c and a Calorie)?

100,000 calories

26. What is the difference between a saturated and unsaturated fat?

Saturated fats have no double bonds in their fatty acid tails, while unsaturated fats do

27. What is this organelle?

Chloroplast

28. What is its function?

The site of photosynthesis

29. What is this organelle?

Smooth endoplasmic reticulum

30. What is its function?

To make lipids and to detoxify substances

31. What is this organelle?

Mitochondrion

32. What is its function?

The site of stages 2 and 3 in cell respiration, which produces ATP

33. What type of organism is this?

Bacteria/Prokaryote

34. Does it have a nucleus?

No

35. How many cells does this organism have?

One (it is a single-celled eukaryote called Paramecium)

36. If we estimated that this organism takes up 25% of the field of view, and the diameter of the field of view is 1.6 mm, what is the approximate size of the organism?

0.4 mm

37. Why does this organism appear green?

The pigment chlorophyll within the chloroplasts absorbs visible light in all wavelengths except for the color green, which is reflected

38. Where else besides the chloroplasts do plants store pigments?

Central vacuole

39. What are 2 organelles that plants have but animals do not?

Chloroplast and central vacuole (I accepted cell wall as well, even though it is not technically an organelle)

40. Are there vacuoles present in your cheek cells?

No, only plants have vacuoles

41. What are 2 major differences between prokaryotes and eukaryotes?

Prokaryotes are evolutionarily older (they evolved first), they are 1/10 the size of eukaryotes, and they do not have any membrane-bound organelles

42. In one of our experiments, we added Biuret's solution to several test solutions to see if there was protein present. Why did we include a protein solution as one of our test solutions?

To establish a control for comparison with the other test solutions

43. What do microscope lenses do to light?

They bend, or refract light, resulting in a magnified image

Extra Credit:

What is the Laney College mascot?

Eddie the Eagle

What did Nekeya bring to class for all of us?

Donut holes