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# SAMPLE QUESTIONS

## Section I. Substances that Dissolve in Water

### Activity 1

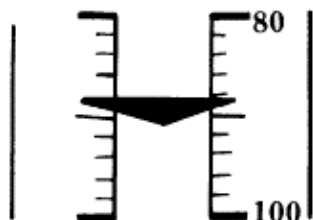
1. All substances dissolve in water at the same speed. T or F
2. A substance is likely to dissolve faster in \_\_\_\_\_ water. (cold or hot)

### Activity 2

1. In order to identify biological things you might use .  
a. an encyclopedia b. a key c. a dictionary
2. Which has water that is moving or flowing? a. river b. lake
3. The opposite of fresh water is .

### Activity 3

1. A liter of water from the Great Salt Lake will weigh more than a liter of water from a mountain stream. T or F
2. When using a balance that compares two objects at once, the heavier object goes up. T or F
3. If the scale reads like this, how much does the object weigh?

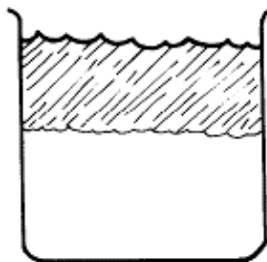


### Activity 4

1. The colored water was always on the bottom. T or F
2. The salt water was always on the bottom. T or F
3. The aquatic habitat where fresh water meets salt water is called an \_\_\_\_\_.

### Activity 5

1. In an estuary you would expect to find animals that need salty water on the bottom. T or F
2. This jar has salty and fresh water. Make an x on the layer that has the fresh water.



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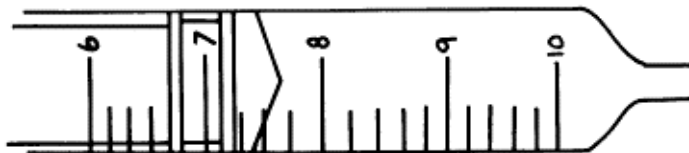
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### Activity 6

1. It is never a good idea to taste an unknown solution. T or F
2. Three students each weighed 100 ml of their unknown solution.  
Lisa's weighed 121 gm; Herman's weighed 123 gms and Julian's was 118 gm. They probably all \_\_\_\_\_ (did or did not) have the same solution.
3. If Bob has 100 ml of water that weighs more than 100 ml of Jennifer's and less than 100 ml of Juan's, who has the saltiest water?

### Activity 7

1. You can measure how much oxygen is in water even though you cannot see the oxygen. T or F
2. If group one measured 2.5 ppm in its sample and group two found 10.2 ppm in its, which group had a sample with the most dissolved : one or two?
3. Much of the dissolved oxygen in water comes from the \_\_\_\_\_.
4. How much dissolved oxygen is in the water when the syringe scale looks like this?



### Activity 8

1. Turbid water is clear. T or F
2. Soil that washes into water always kills everything. T or F
3. The control had only pond water and water with no soil or fertilizer. T or F

### Activity 9

1. Some of the possible variables which needed to be considered in this pollution experiment were a. temperature b. light c. both
2. Pollution always kills everything in an aquatic habitat. T or F
3. Most pollutants cause changes in aquatic habitats. T or F

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## Section II. Temperature Changes in Aquatic Habitats

### Activity 10

1. In the fall a lake will cool more slowly than the air. T or F
2. A fish in a small pond is less likely to get frozen during the winter than a fish in a big lake. T or F
3. Which would cool more quickly a big cup of hot chocolate or a small one?
4. When the thermometer looks like this, what is the temperature?



### Activity 11

1. When an aquatic plant is sealed in a jar of water and put in the dark, the dissolved oxygen in the water a. decreases b. increases
2. Aquatic animals get their oxygen from the a. air b. water
3. If the dissolved oxygen in the jar was 10.2 ppm before a plant was added and the jar sealed and 4.6 ppm when you measured it the next day, the plant a. made dissolved oxygen b. used dissolved oxygen

### Activity 12

1. Plants behave like cold-blooded animals in that their temperature is generally that of their environment. T or F
2. Generally, an aquatic plant uses more oxygen when it is warm than when its environment is cold. T or F
3. When do you think cold-blooded plants and animals use more oxygen: in the summer or the winter?

### Activity 13

1. If you measured the dissolved oxygen in three water samples which had been heated to different temperatures and got results of 2.4 ppm, 7.2 ppm and 10.6 ppm, which was likely to have been heated to the highest temperature?
2. On a very hot summer day, the fish in a shallow pond might have a. too much oxygen b. too little oxygen
3. If you were the person who was in charge of a nuclear power plant which used the water from a river to cool the plant, you would be concerned with making sure that the warm water you returned to the river did not have a. too little b. too much dissolved oxygen.

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### Activity 14

1. A fish in water with low dissolved oxygen may a. move to a place with more oxygen b. move water over its gills faster c. go to the surface for air d. all of these are possible
2. A fish needs dissolved oxygen in its water to survive. T or F
3. If you compared two fish in different jars of water and one opened its gill covers 26 times per minute and the other 54 times per minute, which would most likely have the highest dissolved oxygen in its water? The one which ventilated a. 26 b. 54 times.

### Activity 15

1. You compared two equal volumes of fresh water on a balance and found one was heavier. You know one was hot water and one was cold. Would you predict the heaviest was the a. hot b. cold?
2. On a hot summer day where would you expect to find the warmest water in a lake? a. at the surface b. at the bottom
3. Trout are fish that need cold water. On a summer day would you choose to fish for trout in a lake at the a. surface b. bottom

### Activity 16

1. Which of these threats to fish can humans control to help the fish survive? a. hungry bluefish b. toxic wastes from a chemical plant c. spring storms
2. Which of these might help fish survive? a. pesticide runoff b. sea gulls and ospreys c. sediment prevented from entering water
3. If 1/4 of 1000 fish are killed, how many survive? a. 750 b. 250

### Activity 17

1. Animals do the same things all year, regardless of the season. T or F
2. All animals hibernate in winter. T or F

## Section III. Moving or Staying Put: Maintaining Position within Aquatic Habitats

### Activity 18

1. Phytoplankton are microscopic plants (algae) that drift through the water. T or F
2. If an animal lives on the bottom of a body of water, it is said to be a. mobile b. benthic c. nektonic
3. A plant that lives attached to the bottom must be a. in b. below the zone where light penetrates.

### Activity 19

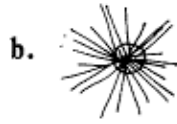
1. If an object floats in fresh water, it will float in salt water T or F
2. If you have an object that floats in salt water, it will float a. higher b. lower in fresh water.
3. If you did not know how to float, do you think it would be easier to learn in a. fresh water b. salt water

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### Activity 20

1. If both of these weigh exactly the same and are a little bit heavier than water so that they sink, which would you predict would sink more slowly? a. or b.



2. Zooplankton and phytoplankton are heavier than water so they tend to sink to the bottom. T or F

### Activity 21

- Which of these is a fin that a fish has only one of? a. tail  
b. pectoral c. pelvic
- The swim bladder helps a fish adjust its a. night vision  
b. swimming speed c. buoyancy
- You could tell what a fish has had to eat recently by opening its  
a. gall bladder b. stomach c. liver
- If a fish puts more gas in its swim bladder, it will a. rise  
b. sink in the water.

### Activity 22

- If you were a scuba diver, you would feel the greatest pressure from water against your body a. at the surface b. at the bottom
- What would you predict might happen to a sealed can of air as it is lowered to the bottom of the ocean? a. nothing b. the air will expand, causing the can to explode c. the can will be crushed

### Activity 23

- An insect that "rides" on surface tension will a. sink b. float if the surface tension is broken.
- If a camper dumped a pan of soapy water in a small pond, the water striders might not survive. T or F

### Activity 24

- Which would you predict would be faster?  
a. a fusiform shaped fish b. a flattened fish c. a round fish
- If your watch read 11:23 and 55 seconds at the beginning of timing a fish run and 11:24 and 10 seconds at the end, how long did the fish take to swim the course? a. 40 seconds b. 15 seconds c. 45 seconds.
- If a fish swam 10 ft in 9 seconds on the first run and 13 seconds on the second run, its average time was a. 10 seconds b. 12 seconds c. 11 seconds.
- Which swims faster? a. a fish that covered 12 ft in 10 seconds  
b. a fish that swam 6 ft in 5 seconds c. both are the same speed

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## Section IV. Light in Water

### Activity 25

1. You are an ocean explorer on a very deep dive in a tiny submarine. You must carry your own lights with you to see much. T or F
2. If you are a diver looking at a sponge that you know is red but appears dark grey, you must be in very a. deep b. shallow water
3. Sediment or soil particles in the water are bad because they block light. T or F

### Activity 26

1. If you are a fish looking for a small fish to eat and you live in 50 ft of water, which would be harder for you to see? a. a red fish B. a blue fish

### Activity 27

1. Aquatic plants release \_\_\_\_\_ into the water when they use light in photosynthesis.
2. Students measured dissolved oxygen in two jars containing aquatic plants that had been exposed to two different light levels. Which dissolved oxygen level was most likely the one from the jar in the brightest light? a. 10.8 ppm b. 4.7 ppm
3. If a new housing development has a big storm and lots of mud runs into a nearby pond, do you think the phytoplankton in the pond will have a. higher b. lower amounts of photosynthesis.
4. In which kind of habitat do you think plants that grow rooted or attached to the bottom would be able to live deeper? a. clean mountain lake b. lake where new houses were being built

### Activity 28

1. A scientist counted the number of fish in a pond each year. In the first five years, she got 61, 55, 67, 60 and 57 fish. Which of these numbers do you think represents the number of fish she might find in the sixth year? a. 16 b. 160 c. 52
2. In the example in question 1, do you think there is a. unlimited b. limited food available to the fish?
3. If the food available to the fish in this pond doubled next year, what do you think might happen to the number of fish in the pond? a. go down b. go up

### Activity 29

1. There are more prey than predators in a stable habitat. T or F
2. The animals that each plants are called
3. There are a. many b. very few top carnivores compared to the other animals in a stable habitat.

### Activity 30

1. Predators are necessary for a balanced food chain. T or F

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**Section V. Exploration, Research and Communication**

**Activity 31**

1. An oceanographer is on a boat, traveling in a straight line. The readings from a depth sounder are as follows: 1,250 ft, 1,236 ft, 843 ft, 675 ft, 723 ft, 1,098 ft, 1,290 ft, 1,279 ft. The boat has just passed over an a. underwater valley b. underwater mountain.
2. Mark the point on the grid below that represents the point C3.

	1	2	3	4	5	6	7
A							
B							
C							
D							
E							
F							

**Activity 32**

1. Scuba means self-contained underwater breathing apparatus. T or F
2. Scuba became popular as a way to explore the sea after the a. First World War b. Second World War
3. Remote sensing means using cameras or other unmanned devices to study an area. T or F
4. The first submarine was used in the Second World War. T or F

**Activity 33**

1. It is always legal to take plants and animals if you are collecting for a school project. T or F
2. Removing any living thing is usually not legal in a state or federal park unless you are catching sportfish with a fishing license. T or F