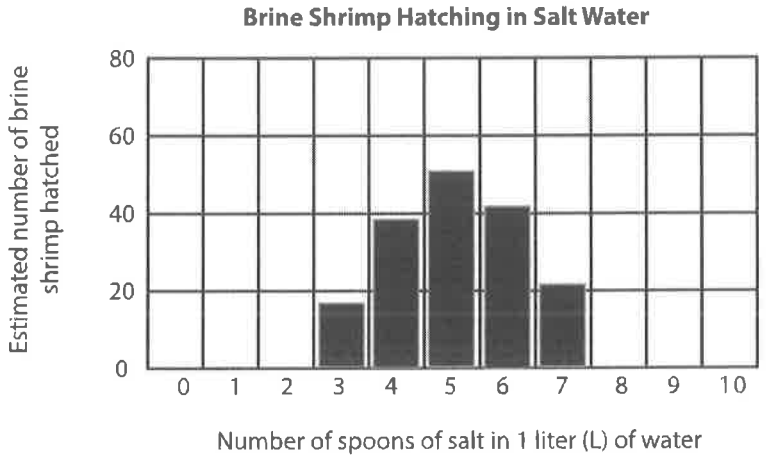
INVESTIGATION 3 I-CHECK
ENVIRONMENTS

Name _____

Date _____

1. A student studied brine shrimp hatching under a range of saltwater conditions. He organized his results on the graph you see here.



a. Which condition is the *optimum* for hatching brine shrimp?

(Mark the one best answer.)

- ○ **A** 0 to 10 spoons of salt
- ○ **B** 5 spoons of salt
- ○ **C** 3 to 7 spoons of salt
- ○ **D** 7 spoons of salt

b. What is the *range of tolerance* for hatching brine shrimp?

(Mark the one best answer.)

- ○ **F** 7 spoons of salt
- ○ **G** 0 to 7 spoons of salt
- ○ **H** 3 to 7 spoons of salt
- ○ **J** 5 spoons of salt

Name _____

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

2. A kangaroo rat has a very long tail, has small front legs, varies in color from dark gray to light brown, and has fur-lined cheek pouches in its mouth. It uses the pouches to store food, which also serves as the rat's source of water.

   a. Which adaptation of the kangaroo rat enables it to survive in the desert?

   (Mark the one best answer.)

   ○ **A** Very long tails

   ○ **B** Small front legs

   ○ **C** Variation in fur color from dark gray to light brown

   ○ **D** Mouth pouches for storing food

   b. Which adaptation would help a population of kangaroo rats survive if it were moved to an environment with dark soil rather than light-colored soil?

   (Mark the one best answer.)

   ○ **F** Very long tails

   ○ **G** Small front legs

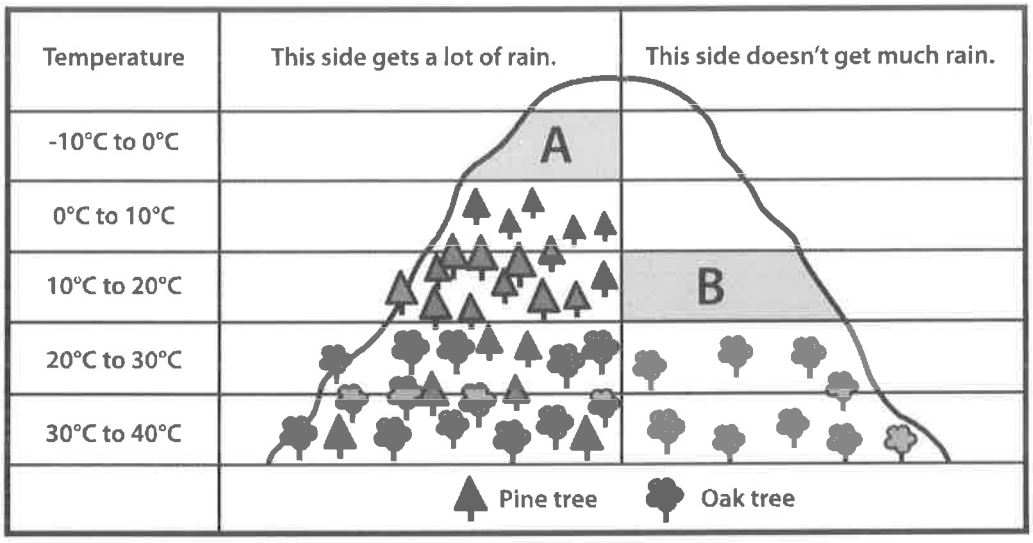
   ○ **H** Variation in fur color from dark gray to light brown

   ○ **J** Mouth pouches for storing food

Name _____

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

A Mountain Environment



3. Study the diagram of a mountain.

   a. What one factor probably causes the lack of pine trees in Area B?

   (Mark the one best answer.)

   ○ **A** The temperature in Area B is too cold.

   ○ **B** Area B doesn't get enough sunlight.

   ○ **C** The air in Area B doesn't have enough oxygen.

   ○ **D** Area B doesn't get much rain.

   b. What is the temperature range of tolerance for *oak* trees?

   (Mark the one best answer.)

   ○ **F** –10°C to 40°C

   ○ **G** 0°C to 40°C

   ○ **H** 20°C to 40°C

   ○ **J** 30°C to 40°C

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

4. What is the relationship between range of tolerance and the optimum for an environmental factor?

   (Mark the one best answer.)

   ○ **A** The optimum is within the range of tolerance.

   ○ **B** The range of tolerance is within the optimum.

   ○ **C** Range of tolerance and optimum are not related.

   ○ **D** Range of tolerance and optimum are the same thing.

5. A fertilizer company releases leftover products into a river environment. What is most likely to happen to the organisms living in that river environment?

   (Mark the one best answer.)

   ○ **A** The plants will benefit and get healthier, but animals will most likely die.

   ○ **B** All of the organisms will become healthier.

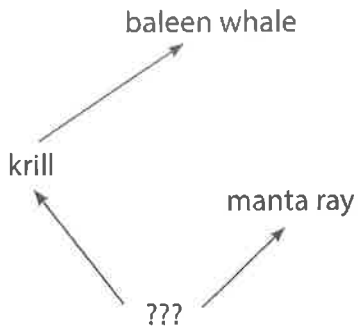
   ○ **C** Some organisms will die, and others will benefit from the change.

   ○ **D** All of the plants and animals will die.

Name _____

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

6. What organism is missing from this food web?
(Mark the one best answer.)



- ○ **A** Phytoplankton
- ○ **B** Octopus
- ○ **C** Lobster
- ○ **D** Small fish

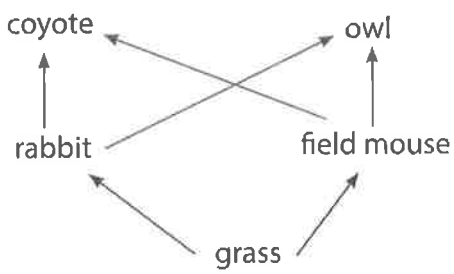
7. Organisms of the same kind differ a little bit in how they look and behave because _____.

(Mark the one best answer.)

- ○ **A** the environment determines how they look and act
- ○ **B** there is variation within one kind of organism
- ○ **C** inherited information is exactly the same from parent to offspring
- ○ **D** organisms adapt to whatever surroundings they are placed in

8. The rabbit population in a certain ecosystem sometimes decreases dramatically. One possible explanation for this decrease is _____.

(Mark the one best answer.)



- ○ **A** an increase in the field mouse population
- ○ **B** a decrease in the owl population
- ○ **C** an increase in the grass population
- ○ **D** an increase in the coyote population

Name _____

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

OPEN-RESPONSE QUESTIONS

9. A student read on the Internet that if you add a chemical called BigFish to the water in your aquarium, the fish will grow twice as fast. Unfortunately, the article did not say how much of the chemical should be added each week.

   Design an experiment that this student could use to find out how much chemical to add to his 80-liter (L) tank to grow bigger fish.

Name _____

INVESTIGATION 3 I-CHECK
ENVIRONMENTS

OPEN-RESPONSE QUESTIONS

10. You have closely observed several different organisms in class: mealworms, isopods, goldfish, guppies, and brine shrimp. All of these organisms look very different, which makes them easy to tell apart. But if you look even more closely, you might have seen that two mealworms don't look exactly alike, even if they are the same type of organism.

    a. Describe how one of the organisms you studied, isopods for example, varies from one to another.

    b. Describe why this variation might be important to a population's survival.