Ministry of Education and Youth

Primary Exit Profile (PEP 5)

June 2024

Performance Task - Science

Time: 1 hour 30 minutes

Write your name and the name of your school below:

Name of Student

Name of School

DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO

PLEASE DO NOT WRITE IN THIS AREA

2037563

General Instructions:

This task has three parts: Part 1, Part 2, and Part 3.

Read the information in each part carefully. Use the information provided to answer ALL questions in each part.

Instructions to Begin:

Carefully read the introduction to the task then move on to answer each question.

Introduction to task

The Pond and the Factory

A scientist, Dr. Albert Williams was interested in finding out if a newly built factory was negatively affecting a nearby pond. He believed that the factory may have released substances that can negatively affect the number of organisms in the pond environment.

Dr. Williams spent months observing and collecting data from the pond and its environment. He needs your help to analyse the data he collected.

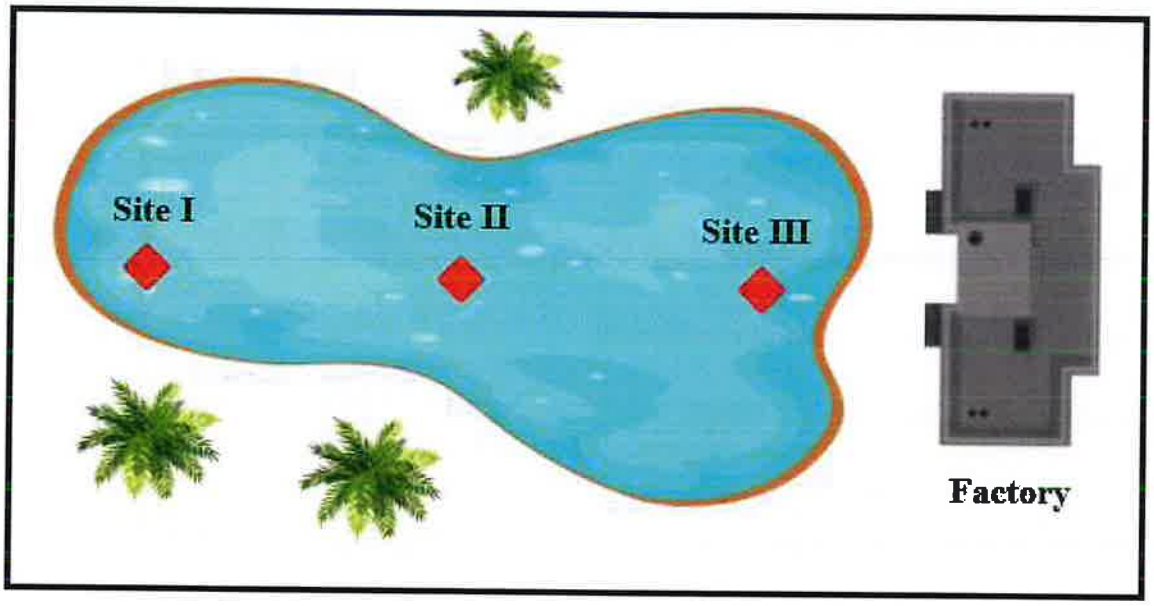
Dr. Williams needs your help to:

- classify organisms in a pond food chain
- identify patterns in the data collected
- explain the observations made
- use evidence to support conclusions

To collect the data, Dr. Williams selected three locations within the pond. He called these locations **Site I**, **Site II**, and **Site III**. Site I was furthest from the factory, and Site III was closest to the factory. Dr. Williams collected all the data he needed from the three sites.

The diagram below shows an overhead view of the pond environment and the three sites Dr. Williams selected.

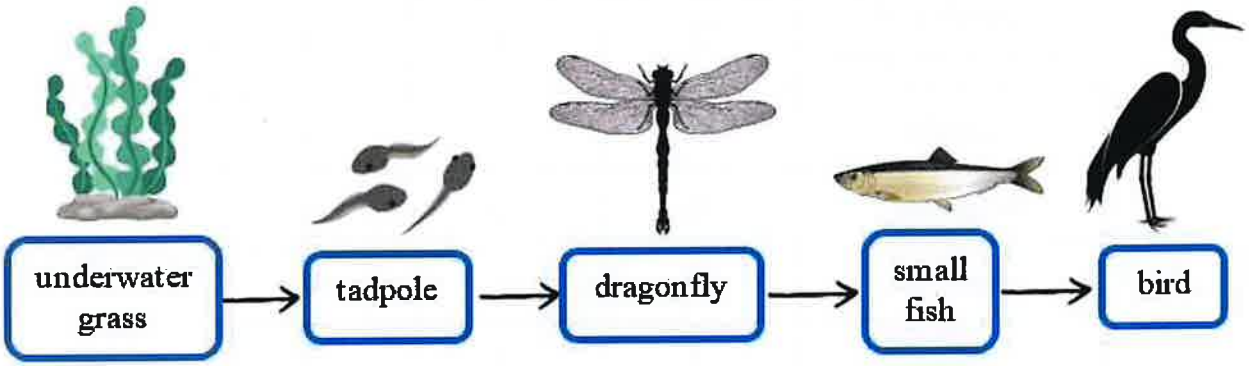
Overhead view of the pond environment showing the three sites



Part 1 – Using a Food Chain

Dr. Williams gathered information on the feeding relationships he observed at each site. He then used this information to construct a food chain. The food chain is shown below.

Pond Food Chain



Use the food chain to help you answer questions 1a and 1b.

1a. Identify **ONE** consumer in the food chain.

1b. State why the small fish is classified as a carnivore.
Support your answer with an example from the pond food chain.

Part 2 – Analysing Data

Dr. Williams counted the number of organisms he observed at each site. Table 1 below shows this information. Use Table 1 to answer questions 2a, 2b and 2c.

Table 1 - Number of organisms observed at each site

Organism	Site I	Site II	Site III
patches of underwater grass	28	18	8
tadpole	32	19	11
dragonfly	10	10	10
small fish	27	19	9
bird	5	4	5

2a. Identify the pattern seen in the population of **tadpoles** as Dr. Williams moved closer to the factory. **Remember, Site III is closest to the factory.**

2b. From the table, name **ONE** organism that appears to be unaffected by its closeness to the factory?

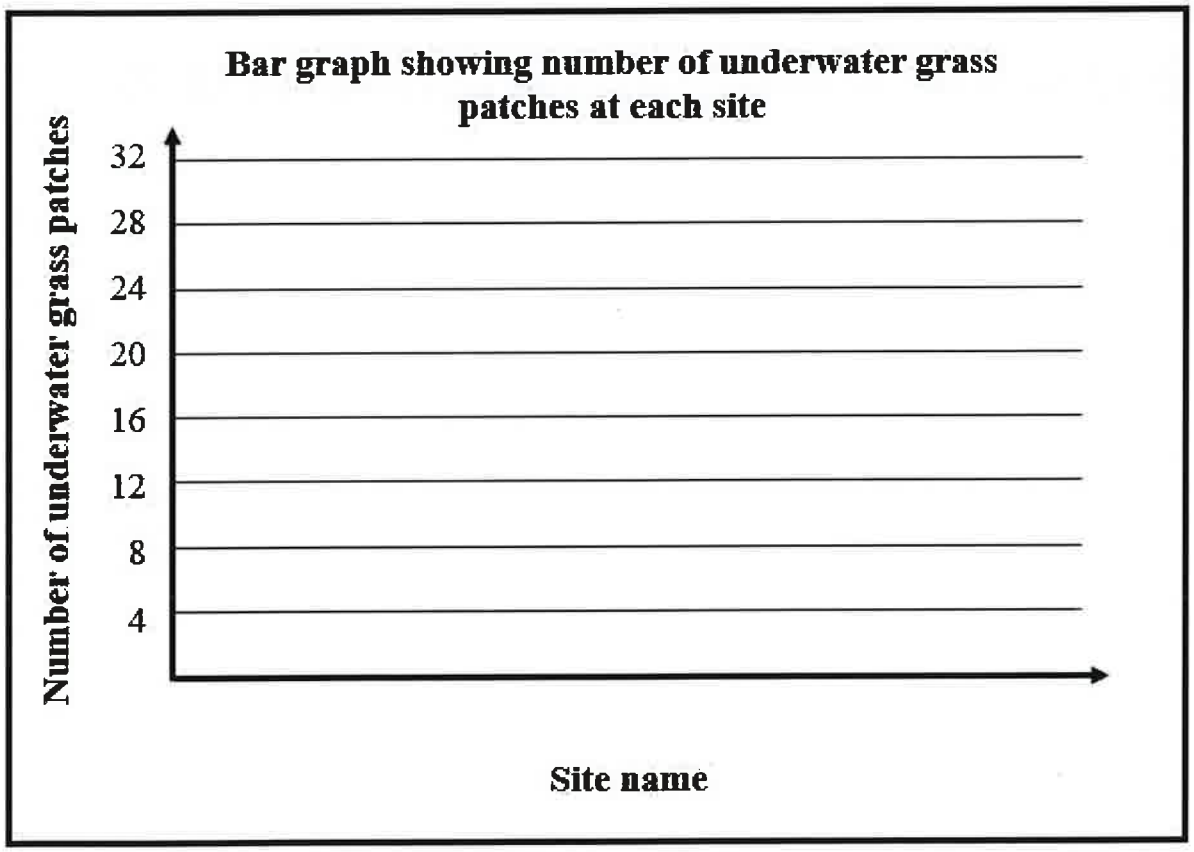
2c. State why the organism you chose in question 2b appears unaffected.

A section of Table 1 is shown below. It shows the number of underwater grass patches observed at Site I, Site II and Site III.

Table 1 - Number of organisms observed at each site

Organism	Site I	Site II	Site III
patches of underwater grass	28	18	8

3. Use this section of Table 1 to complete the bar graph below. Draw and label bars to show the number of underwater grass patches observed at each site.



PLEASE DO NOT WRITE IN THIS AREA

2037563

Dr. Williams needs your help to describe the pattern seen in the bar graph you completed.

4. Use the word or phrase labelled A – F below to **CORRECTLY** complete the statement to describe the pattern seen in the graph. Indicate your response by shading the correct letters.

Remember, Site III is closest to the factory.

Word or phrase:

A. Midway between Site I and
B. The closer Dr. Williams got to
C. The further away Dr. Williams was from
D. increased
E. decreased
F. did not change

Statement:

(A) (B) (C) the factory, the number of underwater grass patches (D) (E) (F) .

PLEASE DO NOT WRITE IN THIS AREA

2037563

Part 3 – Explanation and Conclusion

Dr. Williams wanted to explain the pattern observed in the number of underwater grass patches seen in the bar graph. To do this, he collected information he thought would help.

Some of the information Dr. Williams collected included the pictures below.

Algae seen on surface of pond

Factory drainage pipe in pond

In large amounts, algae can be harmful to organisms that live in water. The algae can block sunlight from entering the water. Algae usually grow in large amounts in waters that are polluted by waste material.

Dr. Williams also collected the information seen in Table 2.

Table 2 - The amount of algae seen growing on the pond surface at each site. It also shows how much sunlight is blocked by the algae at each site.

	Site I	Site II	Site III
Amount of algae growing on pond surface	Low	Moderate	High
Amount of sunlight blocked by algae	Low	Moderate	High

5. Use the information in **Tabel 2 (page 9)** to explain the pattern you identified in question 4.

After analysing all the data he collected, Dr. Williams concluded that the factory is negatively affecting most of the pond organisms.

6. Provide **TWO** details, as evidence, to support Dr. Williams' conclusion. Be sure to use the information Dr. Williams gathered.