

All About Fish

Investigation Data Sheet



How Does Water Temperature Affect the Breathing Rate of Fish?

Goldfish, like all fish, are cold-blooded. Their body temperature depends on the temperature of the water around them. Considering water temperature is important to a fish, what do you think will happen if you make the water in its habitat colder?

Objective

Conduct an experiment to observe the effect of water temperature on the respiration rate of fish.

Materials

- a fish tank or wide-mouthed fish bowl filled with room-temperature water
- a thermometer
- some ice
- a stopwatch
- a goldfish
- an adult helper

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Carefully place a thermometer in the goldfish bowl so that you can read it without hurting or disrupting the fish. Look at the temperature reading on the thermometer and record it in the table below. Now, start the stopwatch and start counting the number of times the fish's gill covering opens and closes. Stop counting when the timer reads one minute. Record the number of gill movements you counted in one minute.

2. Make the water colder by adding a handful of small ice cubes to the water. Be sure to add the cubes very slowly so that you do not harm the fish. Watch the thermometer until the temperature of the water is near 10°C. Record the exact temperature and start the stopwatch. Count the number of gill movements made by the goldfish. When the timer reaches one minute, stop the timer and record the total number of gill movements.

Conclusions

- How was the goldfish affected by the temperature of its environment?

- When was the breathing of the goldfish slower? Why did this happen?

- Based on your data and observations, what water temperature is ideal for the healthy growth of a goldfish? Explain.

Water temperature (°C)	Gill movements in 1 minute	Observations