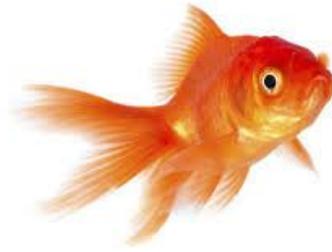


# Goldfish



- Kindergarten - Animals Two by Two
- 4th Grade - Environments

**What to do when the fish arrive.** Float the unopened bag in the aquarium of dechlorinated or spring water for about 15 minutes to equalize the temperature. When temperatures are equal, pour contents of bag into the aquarium. Discard shipping water. **DO NOT USE CHLORINATED TAP WATER!** *You can dechlorinate water by simply leaving tap water out overnight.*

**Background.** Plants and animals that live in water make up the majority of biomass. They have so much more space in which to live. Life undoubtedly originated in the water, and many life-forms have never left it. Living in a dense fluid like water provides a lot of support for organisms, and the free-swimming forms have three-dimensional mobility.

For many of us a goldfish bowl was our introduction to aquatic animals. The beautiful orange fish are hardy and forgiving in terms of their living requirements. They are good classroom animals, requiring a minimum amount of care to keep them in good shape.

Goldfish weren't always gold; their wild kin are dark gray and olive-green. Goldfish are related to carp, so they have a rather unglamorous lifestyle, spending their time foraging in murky water for a variety of foods, including plants, insects, snails, and the eggs of other fish. The lovely colors and sometimes bizarre shapes of goldfish are the products of selective breeding conducted in China and Japan, where they are native.

**Water.** Chlorine in regular tap water can be lethal to both goldfish and guppies. There are two ways to dechlorinate water. The first is to age the tap water by letting it sit in an open container for at least 24 hours. Chlorine dissolved in the water escapes into the air. Or add dechlorinating chemicals (included in the kit) to tap water. Set aside a pitcher of water to age, so that you will have it ready to maintain the water level of the aquarium. Keep your aquarium covered to reduce evaporation and to keep dust out and fish in.

The water in an aquarium will be fine for extended periods of time. Aged or treated tap water should be added to maintain the proper level, and about once a week 1/4th of the water should be removed and treated water added in order to reduce the concentration of nitrogen-containing chemicals, the excretory products of the animals. Without changing or replacing the water, it will start to smell like ammonia and the water will begin to look cloudy.

If a fish dies, or if too much food is put into your aquarium remove the fish or food immediately and change the water. If you don't, bacteria will proliferate, taking advantage of the bounty of food. The result

will be a putrid smell and danger for your fish and other aquarium animals. The bacteria will quickly deplete the oxygen supply in the aquarium, and the animals will suffocate.

**Temperature.** In fact, it is more important to keep your aquarium from getting too warm. Warm water holds less oxygen in solution, so aquatic organisms are more comfortable in cooler water. Keep your aquarium away from direct sun except for specific purposes.

**Aquarium care.** Goldfish don't place many demands on the aquarist. They need unpolluted water, but it is not necessary to provide extra oxygen with an air pump. You may experience some mortality when you first introduce new fish into your aquarium, but this is often due to transportation stress. As long as the fish are not crowded, they will be able to get enough oxygen just from what is dissolved at the surface of the water. To maximize the survival rate we suggest 1-2 goldfish per 6 L basins supplied in the kit.

**Food.** Goldfish will eat a wide variety of foods, but the most convenient is a commercial flake food. This kind of food floats, and the fish will quickly learn to come to the surface to eat. The most important thing about feeding is not to overfeed! Feed your fish a pinch of food twice a day. A "pinch" is the amount they can eat in 3 minutes. Too much food left in the aquarium will foul the water. Fish-feeding cakes—compressed food that disintegrates slowly—are available at pet and aquarium stores if you need to leave the fish unattended for more than 3 days. Goldfish can go without feeding over a two-day weekend if they are fed twice a day during the week. They can also nibble on the elodea or other aquatic plants.

**Reproduction.** Goldfish are very prolific in nature and in special breeding ponds, but don't expect any offspring in the classroom. They need lots of plants and other cover to propagate successfully. If they did lay eggs in the aquarium, they would doubtless eat all of their own eggs during their incessant foraging for food morsels. Goldfish can grow to be 40 cm (16") long and may live more than 10 years.

**What to do with them when the investigations are completed.** Keep and care for the goldfish in your class or give the fish to another teacher. *You can also return them to the district science coordinator for distribution to other schools.*

**Care for the environment.** Goldfish should never be released into the wild nor disposed in the sewer. These fish can become unwanted pests, damaging the environment, local organisms, and food webs. To humanely dispose of fish, place them in water in a plastic bag and then in the freezer. The frozen fish can be placed in the compost. The plastic bag should be recycled.