Types of Reproduction in Organisms

Reproduction is how living organisms produce new offspring. There are two main types of reproduction:

- **Asexual reproduction** occurs when offspring inherit all of the genetic material from one parent.
- **Sexual reproduction** occurs when each of two parents donates half of their genetic material to produce offspring that are genetically unique.

Read each description. Decide whether the organism reproduces sexually, asexually, or both.

Sample answers

1. Sea trout live in the sea or in estuaries, but they return to freshwater rivers to reproduce. The female sea trout digs a nest in gravel shallows and releases her eggs. One or more males then cover the eggs with sperm. Once the eggs are fertilized, the female covers the eggs with gravel to protect them until they are ready to hatch.

   Do sea trout reproduce sexually, asexually, or both? Explain how you know.

   Sea trout reproduce sexually. To produce offspring, both female and male sea trout contribute genetic material in the form of eggs and sperm.

2. *Giardia* is a parasite that commonly infects humans. If a person accidentally swallows *Giardia* from a contaminated source, the parasite travels to the small intestine where it begins to feed off and absorb nutrients from the infected person. *Giardia* multiplies by splitting into two identical copies, a process called **binary fission**. *Giardia* infections can be treated with prescription drugs.

   Does *Giardia* reproduce sexually, asexually, or both? Explain how you know.

   Giardia reproduces asexually. A single *Giardia* parasite produces offspring that are genetically identical to itself via binary fission.

3. Quaking aspen trees are the most widely distributed tree species in North America. They are **dioecious**, meaning each tree is either male or female. Both male and female aspens produce hanging flowers called **catkins,** but only male catkins contain pollen. Fertilization occurs when pollen is transferred from a male to a female by the wind. However, pollination is not necessary for quaking aspens to reproduce. They can also send up new stems from a single root system to create a clone.

   Do quaking aspens reproduce sexually, asexually, or both? Explain how you know.

   Quaking aspens reproduce both sexually and asexually. Quaking aspens reproduce sexually when the wind transfers pollen from a male to a female tree. They reproduce asexually when they send up new stems from their root system to create a clone.

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Keep going! Answer the questions below. Sample answers

4. Gray wolves live in packs and mate for life. Typically, the top-ranking "alpha" male and female breed once a year. When this happens, the male's sperm fertilizes the female's eggs. A litter of four to six pups is born in the spring and is raised in a den by the entire wolf pack.

   Do gray wolves reproduce sexually, asexually, or both? Explain how you know.

   Gray wolves reproduce sexually. To produce offspring, both the female and male wolves contribute genetic material in the form of eggs and sperm.

5. Harvester ants live in large colonies. The queen ant mates only once in her lifetime and stores the male's sperm in a specialized pouch. The queen controls the gender and function of her offspring. If she opens her pouch and allows sperm to fertilize her eggs, the eggs develop into either wingless female workers or reproductively capable queens. If she does not allow her eggs to be fertilized, the eggs develop into winged males whose only purpose is to fertilize queens.

   Do queen harvester ants reproduce sexually, asexually, or both? Explain how you know.

   Queen harvester ants reproduce both sexually and asexually. Queen harvester ants reproduce sexually when the queen ant opens her pouch and allows sperm to fertilize her eggs. They reproduce asexually when the eggs develop without fertilization.

6. A blackberry flower contains both male and female parts. Insects feeding on the flower's nectar can transfer pollen from one flower to another, leading to fertilization and the creation of new seeds. However, that isn't the only way blackberry plants reproduce. They are also able to develop new seeds in their ovaries without any help from pollen, producing clones of the parent.

   Do blackberry plants reproduce sexually, asexually, or both? Explain how you know.

   Blackberry plants reproduce both sexually and asexually. Blackberry plants reproduce sexually when insects transfer pollen from one flower to another. They reproduce asexually when they develop new seeds in their ovaries without any help from pollen.

7. Amazon mollies are small fish found in southern Texas and northeastern Mexico. They are named after the Amazons, an all-female tribe of warriors from Greek mythology, because they are an entirely female species. Amazon mollies need sperm from males of different, related species to trigger the development of new fish from their eggs, but the sperm do not fertilize the eggs. All of the genetic material in the offspring comes from the mother.

   Do Amazon mollies reproduce sexually, asexually, or both? Explain how you know.

   Amazon mollies reproduce asexually. The Amazon molly produces genetically identical offspring. Though male fish must provide sperm, the male fish does not contribute any genetic material to the offspring.