Summer Brain Gain Activities
Life Cycle

Use the cards to help reinforce science concepts.

**Bean plant**

Beans need dirt (soil), water, and sunlight to grow. Bean plants start as seeds. The seeds sprout to form a seedling. A seedling uses food stored inside the seed to help it grow roots. As the young plant continues to grow, it forms leaves that capture sunlight. The bean plant uses the sunlight to make its own food. As the bean plant gets older, the plant makes flowers and then fruit. The fruit is the bean pod that holds “beans,” which are really seeds. The new beans can grow new bean plants.

**Monarch Butterfly**

A monarch butterfly first starts as an egg. A caterpillar (larva) then hatches from the egg after 5 to 10 days and eats for about three weeks. Then the caterpillar forms a chrysalis (pupa) and changes its body through a process called metamorphosis. After another 2 to 3 weeks, the adult butterfly hatches from the chrysalis.

Monarch butterflies live about 9 months. They also migrate by flying to warmer lands to avoid the cold during winter months.

**Root Vegetable**

Carrots are root vegetables. The roots of the carrot plant sprout from the seed and grow downward underneath the dirt. Above ground, the leaves of the carrot collect sunlight for the carrot to make its own food. The swollen orange root of the carrot is mostly made of water. Different kinds of carrots can make purple, white, red, or yellow roots. The largest carrot ever grown was over 15 feet (5 m) long!

**Cat**

A kitten is born live from its mother. When first born, a kitten’s eyes are closed and it cannot lift its own head. It takes about a week for the kitten to open its eyes. A kitten starts life drinking milk from its mother. After about four weeks, a kitten will start eating solid food. As it continues to grow, a young cat begins to look more and more like an adult cat. A kitten is considered an adult cat after about a year of growth. However, young cats can start taking care of themselves as soon as nine weeks after birth.
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**Chick Development**

A lot of changes go on inside an egg before a baby chick can hatch. A baby chicken egg starts as a tiny **embryo** inside the egg along with the **egg yolk**. The embryo uses the yolk to get nutrients while it changes and grows into a baby chick. A mother hen will sit on an egg until it hatches. The mother hen only leaves the egg briefly to eat and drink, and always returns quickly to keep it warm. It takes 21 days for an embryo to fully develop inside the egg. Then, the baby chick pecks its way out of its eggshell and is ready to continue its life cycle.

**Chicken**

A chicken starts as an **egg**. The egg contains a yolk that helps provide food for the embryo growing inside. After about three weeks, a **chick** hatches from the egg. The chick has very soft feathers and is unable to fly. The chick loses its soft feathers and begins to grow thicker feathers as a **young chicken**. It takes about three months for a chick to grow into an adult **chicken**. An adult male chicken called a rooster or cockerel. An adult female is called a hen. A hen can lay one egg a day!
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Dandelion

Dandelions sprout from tiny seeds like all plants. Roots hold the dandelion in the ground and help capture water. The dandelion’s stem holds the plant up and gives it support. The leaves capture sunlight for the dandelion to make its own food. After a young dandelion grows, it forms a bud that blooms into a flower. The flower then makes seeds. A dandelion uses the wind to help spread its seeds to create new dandelions.

Salmon

After hatching from eggs, salmon are called alevin and still have part of the egg sac attached to their bodies for food. These tiny fish grow into small fry without yolk sacs, and then into larger juvenile fish, also called smolt. This growing process takes several months to two years depending on the kind of salmon. Smolt then make the journey from the fresh water streams out to salt water oceans. In the ocean, a salmon can take two to five years to fully grow. Adult salmon always return to the same place they were born to lay new eggs.

Flower

Flowers are the parts of plants that produce fruit and seeds. There are thousands of different kinds of plants that have bright, attractive flowers. Like all plants, they need soil, water, sunlight, and air to survive.

The tiny dust inside flowers is called pollen. Pollen helps make new flowers. Bees, butterflies, and other insects often get pollen dust on their bodies and spread it from flower to flower to help create new seeds for new plants.

Chicken

A chicken starts as an egg. The egg contains a yolk that helps provide food for the embryo growing inside. After about three weeks, a chick hatches from the egg. The chick has very soft feathers and is unable to fly. The chick loses its soft feathers and begins to grow thicker feathers as a young chicken. It takes about three months for a chick to grow into an adult chicken. An adult male chicken called a rooster or cockerel. An adult female is called a hen. A hen can lay one egg a day!
Housefly

Houseflies start out as eggs. The eggs hatch into larvae, or maggots, within 24 hours after they are laid. Maggots change into a harder pupa after about five days. Like butterflies, houseflies change their bodies through a process called metamorphosis. After metamorphosis occurs (3 to 5 days), an adult fly hatches out of the pupa. Another 2 to 3 days later, the newly adult fly is ready to lay its own eggs and start the life cycle all over again.

Houseflies can fly at the speed of about 5 miles (8 km) an hour. Their small size makes it appear they can fly much faster.

Frog

A frog’s life begins as an egg in water. Tadpoles hatch from the eggs after 1 to 3 weeks, depending on the type of frog. The tadpoles undergo metamorphosis as their growing bodies change. The tails of tadpoles begin to shrink and arms and legs begin to grow. At first, the tadpole uses gills to breathe under water. As it grows, the gills disappear. The tadpole grows into a froglet that can breathe air using regular lungs. Finally, the frog is able to live on land. An adult frog takes 3 to 4 months to hatch, change, and fully grow.

Tadpole

A frog is called a tadpole when it is in the second stage of its life cycle. A tadpole hatches from an egg and uses its gills to breathe under water. A tadpole begins life by feeding on algae in the water. The tadpole undergoes metamorphosis and begins to grow arms and legs. As it continues to grow, its tail begins to shrink and its body begins to take the shape of a frog. An older tadpole can start to feed on small water insects. After about 3 months, its arms and legs are fully developed and its tail is now a stub. At this stage, the tadpole is known as a froglet that will continue to grow into an adult frog.

Penguin

Penguins hatch from eggs like other birds. A baby penguin chick has soft, fluffy feathers. Chicks are fed food from the mouths of their parents. As they grow, the chicks lose their soft feathers and replace them with feathers that are oily and good for swimming in cold water. It takes 7–13 weeks for a chick to grow into a young penguin ready to swim. Once a penguin can swim, it is able to hunt food and survive on its own.

Male emperor penguins sit on eggs to keep them warm and hatch them.

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**Pollination**

Pollination is the way tiny dust inside flowers (called pollen) spreads from one flower to the next. Bees are one of many insects very important to the life cycles of flowers. Bees land on flowers to feed off the sweet nectar inside the flowers. As the bees move around the flower collecting nectar, the tiny pollen dust sticks to the bee’s legs. When bees fly away and land on the next flower, pollen dust falls off their legs and mixes into the new flower. Without the help of the bees, flowers would have a very hard time spreading their pollen and creating new flowers.

**Snake**

Snakes are reptiles and most snakes start their lives hatching from eggs. A baby snake has a sharp egg tooth that helps cut open the tough eggshell, which feels like leather. A baby snake loses the egg tooth after it hatches. Snakes are born ready to hunt. They do not need to be fed by their parents. In order to have room to grow, snakes shed their skins. They start shedding old skin by rubbing up against rocks and other rough things. Some snakes, like rattlesnakes and boa constrictors, give birth to live young.

**Human**

Human beings are mammals. Human mothers give live birth to their babies. A newly born baby is called an infant. Infants grow into toddlers after two years, and toddlers grow into children. Children are called teenagers during their first stages of becoming young adults. Humans become grown adults when they reach about twenty years of age. A lot of changes happen on the inside of the human body as it grows. For example, an infant is born with over 300 bones in its body. But as adults, humans have just 206 bones.

**Tomato**

People have used the fruit of the tomato plant for cooking for thousands of years. Tomato plants sprout from seeds and quickly form roots to take hold in the dirt. The roots capture water and nutrients from the soil and pass them up the stem for the rest of the plant to use. Leaves capture sunlight and turn it into food for the plant to use and grow. The plant first grows flowers that then make fruit. The fruit starts off small and green, but grows into ripe orange or red tomatoes. The fruit also holds seeds that can be planted to grow new plants.
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**Seasonal Change**

Many places on Earth have four seasons. People often watch the changing of trees to signal a new season. **Spring** starts with cooler, wet weather that helps flowering trees make buds. The buds sprout into tiny leaves and flowers. The warm weather of **summer** allows trees to grow full leaves that capture sunlight for the tree to make its own food. In **autumn**, the green leaves stop making food and die. This often turns the leaves into bright, beautiful shades of red, orange, and yellow. In **winter**, flowering trees have no leaves and are not active. Trees in the winter wait until spring to start growing all over again.