THE CIRCLE OF LIFE

AGES 11-14

Curriculum resource pack for life cycles

WWT is one of the UK's leading providers of outdoor learning. We welcome over 50,000 learners per year to our Wetland Centres where we provide unique opportunities for learners of all ages and abilities to interact with wetland wildlife from the UK and across the world.

We are open all year round with sessions for every season. Whether you're looking for curriculum-linked learning or simply a fun day out, there really is something for everyone. To find out more about our school visits programme please visit **learningzone.wwt.org.uk.**

Why wetlands?

WWT works across the UK to save, restore and build wetlands for wildlife and people. Wetlands are one of the most important habitats on earth – storing huge amounts of CO_2, providing a natural way of stopping flooding and serving as a home for huge numbers of different creatures. Spending time in wetlands is also proven to improve mental health and wellbeing!

Using this resource pack

This resource pack contains classroom activities designed to cover key curriculum content as well as outdoor activities designed to promote nature connection and a love of the natural world. This is accompanied by supporting resources that can be printed or used on screen with your pupils.

CURRICULUM LINKS

England

KS3: Science

- Heredity as the process by which genetic information is transmitted from one generation to the next

Northern Ireland

KS3: Science and Technology

- Explore the importance of biodiversity, how it impacts on our lives and how it is affected by human activity

Wales

KS3: Science and Technology

- I can explain how variation of organisms within a changing environment leads to natural selection which drives evolution
- I can explain how biological processes and control mechanisms enable organisms to function, develop, reproduce and survive

Scotland

Sciences

- Fourth: I understand how animal and plant species depend on each other and how living things are adapted for survival

INDOOR ACTIVITIES

YOU WILL NEED:

Life cycle visuals (one set per group – see the end of this pack)
Scissors
Glue

Other relevant resources

Activities:

- Make your own frog and toad hall
- Make your own mini pond

School visits:

- Some of our centres offer sessions focusing on life cycles at KS3. Visit our Learning Zone to find out more **learningzone.wwt.org.uk**

NOTE: **Where you see a Q this indicates a question to ask your pupils.**

Activity 1: Comparing life cycles

- A life cycle shows how a living thing is born, grows into an adult and then has babies of its own. All living things have a life cycle. Whilst they have similarities, they can also be quite different. This activity compares the life cycle of an otter, a goose and a frog.
- Hand out a set of life cycle visuals to each group and look at each in turn.

Q **Which group of creatures does each animal belong to? (mammal, bird, amphibian, reptile, fish, insect, arachnid, mollusc, crustacean, worm)**

Otters are mammals. Geese are birds. Frogs are amphibians. Dragonflies are insects.

An otter life cycle

- Look at the otter life cycle together as a class. This is a very simple life cycle. The mother otter gives birth to babies which then grow into adults and have their own babies. The baby otters look like miniature versions of the adults.

Q **Do you know what a baby otter is called?**

A baby otter is called a pup (or sometimes a kit or kitten).

A goose life cycle

- Look at the goose life cycle together as a class. The goose shown is a Canada goose. You can often see them in parks across the UK.

Q **How is this different to the otter life cycle?**

The female goose lays eggs rather than giving birth to babies.
The shape of the young and adults is the same but the colour of the feathers is different.

Q **Do you know what a baby goose is called?**

A baby goose is called a gosling. They are covered in soft, fluffy down feathers and are unable to fly at first because they haven't yet strengthened their wings or developed their flight feathers.

A frog life cycle

- Now look at the frog life cycle.

Q **How is this different to other life cycles?**

The eggs are laid in water and are surrounded by a soft jelly rather than a shell.
The young look very different to the adults.
There is an additional stage.

Q **Do you know what frogs' eggs are called?**

Frogs' eggs are called spawn. Frogs can lay up to 4,000 eggs at one time!

Q **Do you know what we call the animals at the next stage?**

Tadpoles develop from the spawn. Frog tadpoles have gills like a fish meaning that they don't have to come to the surface to breathe.

Q **Do you know what we call the animals at the next stage?**

The tadpoles gradually change into 'froglets'. They grow legs and the tail starts to shrink. They develop lungs and need to come to the surface to breathe (just like the adults). The froglets grow bigger and completely lose their tails, becoming adult frogs. The life cycle then starts all over again.

- Use the information below to talk through the idea of metamorphosis with your class.

Key word
METAMORPHOSIS

Metamorphosis is when an animal's body changes completely as it goes through its life cycle. The tadpole looks very different to the adult frog, so we say the animal has gone through metamorphosis. Otters and geese don't go through metamorphosis. Their young look very much like, and are the same shape as, the adult animal.

A dragonfly life cycle

- Look at the dragonfly life cycle together as a class.

Q **What are the similarities and differences between this and the other life cycles?**

Dragonflies lay eggs like geese and frogs. They lay their eggs either in or near water. They are laid in a jelly-like substance, like those of the frog. The young look very different to the adults.

Q **Do you know what the first stage of the life cycle is called?**

Dragonflies emerge from the eggs as nymphs (or larvae).

Q **Does a dragonfly go through metamorphosis?**

Yes, the nymphs look different to the adult dragonfly as they don't have wings and have a much shorter body.

The nymph crawls out of the water, up the stem of a plant. It sheds its skin onto the stem of the plant and becomes an adult dragonfly. This is called a 'molt'. When they molt, the skin is left behind.

Top Tip

Look for the shed skin on the stem of plants growing in and around ponds. They're a fantastic find!

Review: Re-creating the life cylce

- Give out one set of life cycle visuals to each group.
- Ask them to work as a team to cut out the individual stages of each and jumble them up
- Challenge each group to re-create each of the life cycles:

1. Sort the cut pieces according to which animal life cycle they are part of. Taking each animal in turn...
2. Place the different stages in the correct order.
3. Stick them onto a separate blank piece of paper in the correct order.
4. Add arrows showing which way the cycle goes.
5. Label each of the stages as follows:

OTTER: PUP > ADULT OTTER

GOOSE: EGGS > GOSLING > ADULT GOOSE

FROG: SPAWN > TADPOLE > FROGLET > ADULT FROG

DRAGONFLY: EGGS > NYMPH > MOLT > ADULT DRAGONFLY

Q **Imagine you were an animal that changes completely as it develops. How do you think this would feel? Isn't nature amazing!**

Activity 2: Create a life cycle

- Ask the class if they know the life cycle of any other animal. A human? A butterfly? A chicken?
- Discuss the different stages as a class verbally and then set the challenge of creating their own life cycle.
- Learners work as a team, with each person completing one stage. Can you organise yourselves to create a complete life cycle? Can you get them in the correct order and add arrows and labels too?

Activity 3: Heredity and DNA

Q **Why is it called a life cyle?**

It is called a life cycle because two animals of the same species reproducing will always create offspring, a new generation, that: start life the same way, grow the same way, look similar to them in their adult form and then reproduce to have their own offspring of the same species, therefore creating a life cycle.

- The passing on of characteristics from one generation to the next is called heredity and the unit of heredity is called a gene.

Q **What are genes?**

A gene is a section of a complex molecule called DNA. DNA is contained in chromosomes which are found in the nucleus of most cells. Each gene is responsible for, or 'codes to' a certain characteristic that is transferred from a parent to offspring.

- Learners should make a list of characteristics that can be passed onto the next generation through their genes.
- Start by looking around the room and listing human characteristics e.g. eye colour, hair colour and skin tone, height, face shape etc.
- Then begin to think about other animals – what characteristics do animals pass on through heredity? E.g. fur pattern (tiger and zebra stripes or leopard spots), shape (tooth shape, bird beak shape, elephant trunk or giraffe neck), size (mostly animals of the same species grow to approximately the same size due to heredity bone size) or anything else that distinguishes a certain organism.

OUTDOOR ACTIVITIES

Activity 4: Getting active

- Print the three different life cycles.
- Go outside and peg them up in three different areas.
- Give clues e.g. this life cycle has eggs in it, this life cycle has four stages, this animal changes from a larva to a pupa. It's a…..ladybird! As soon as learners think they know which life cycle the clues are about, they can run to the pegged picture of it.

OTTER

Life cycle

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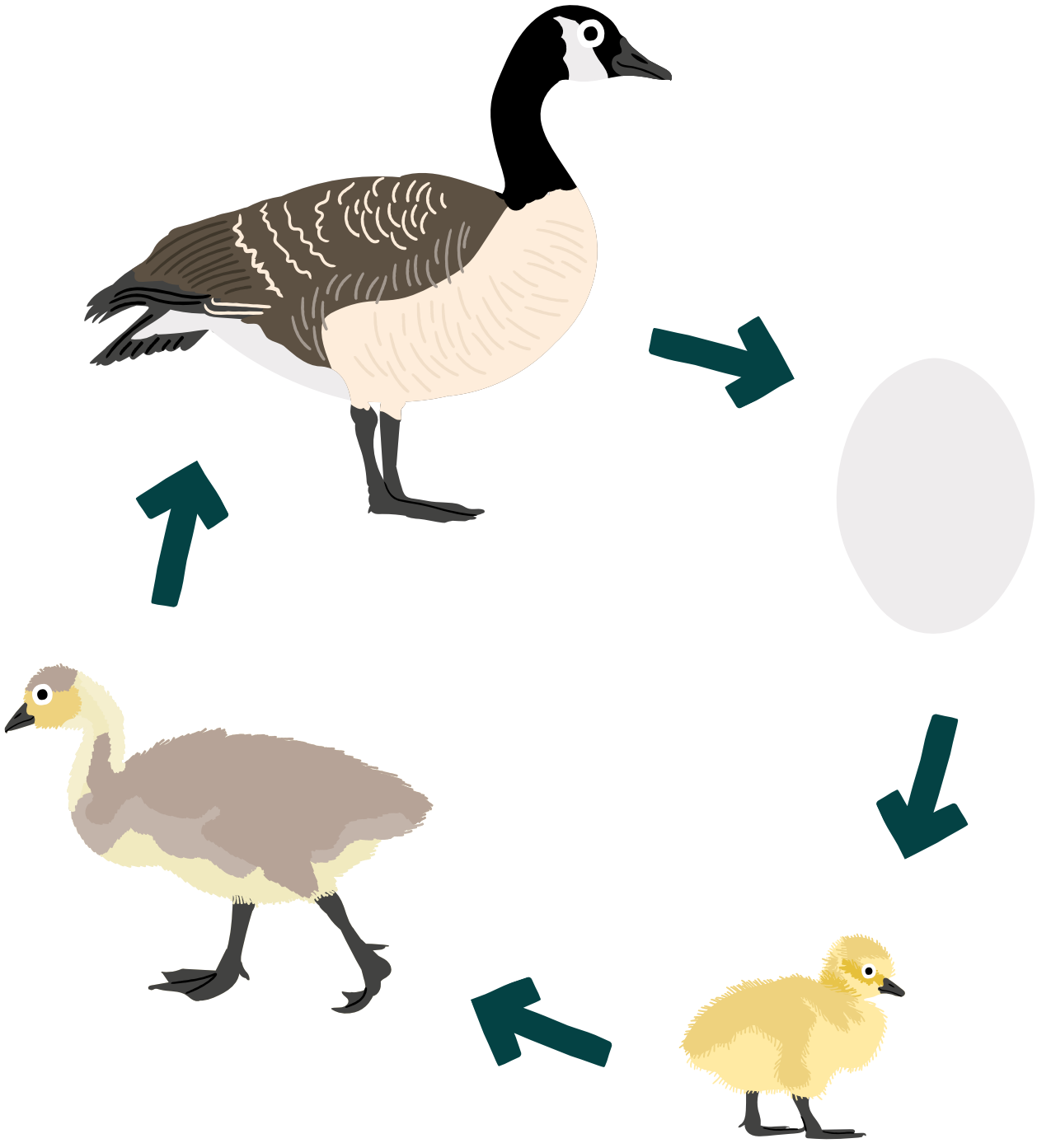
GOOSE

Life cycle



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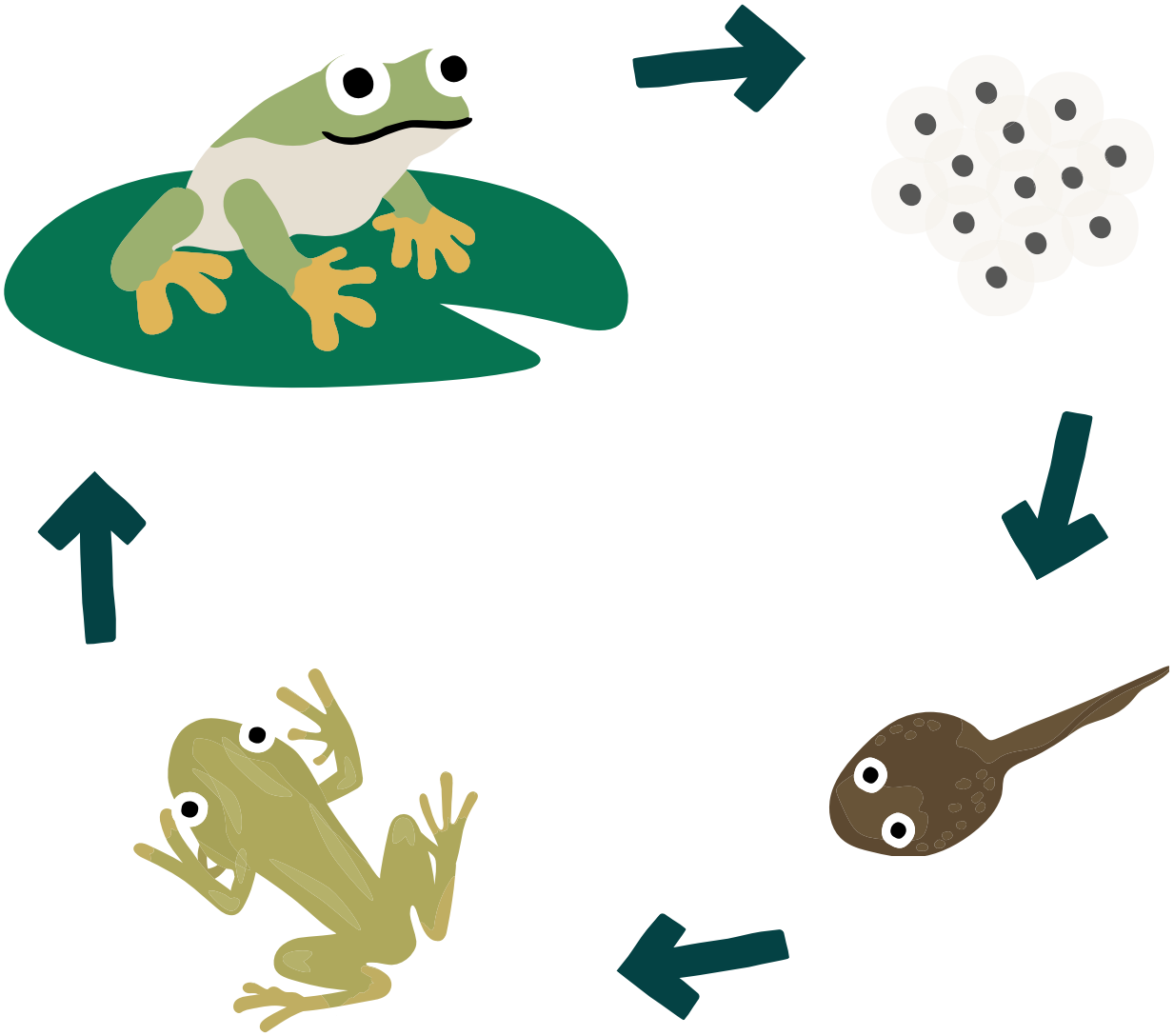
FROG

Life cycle



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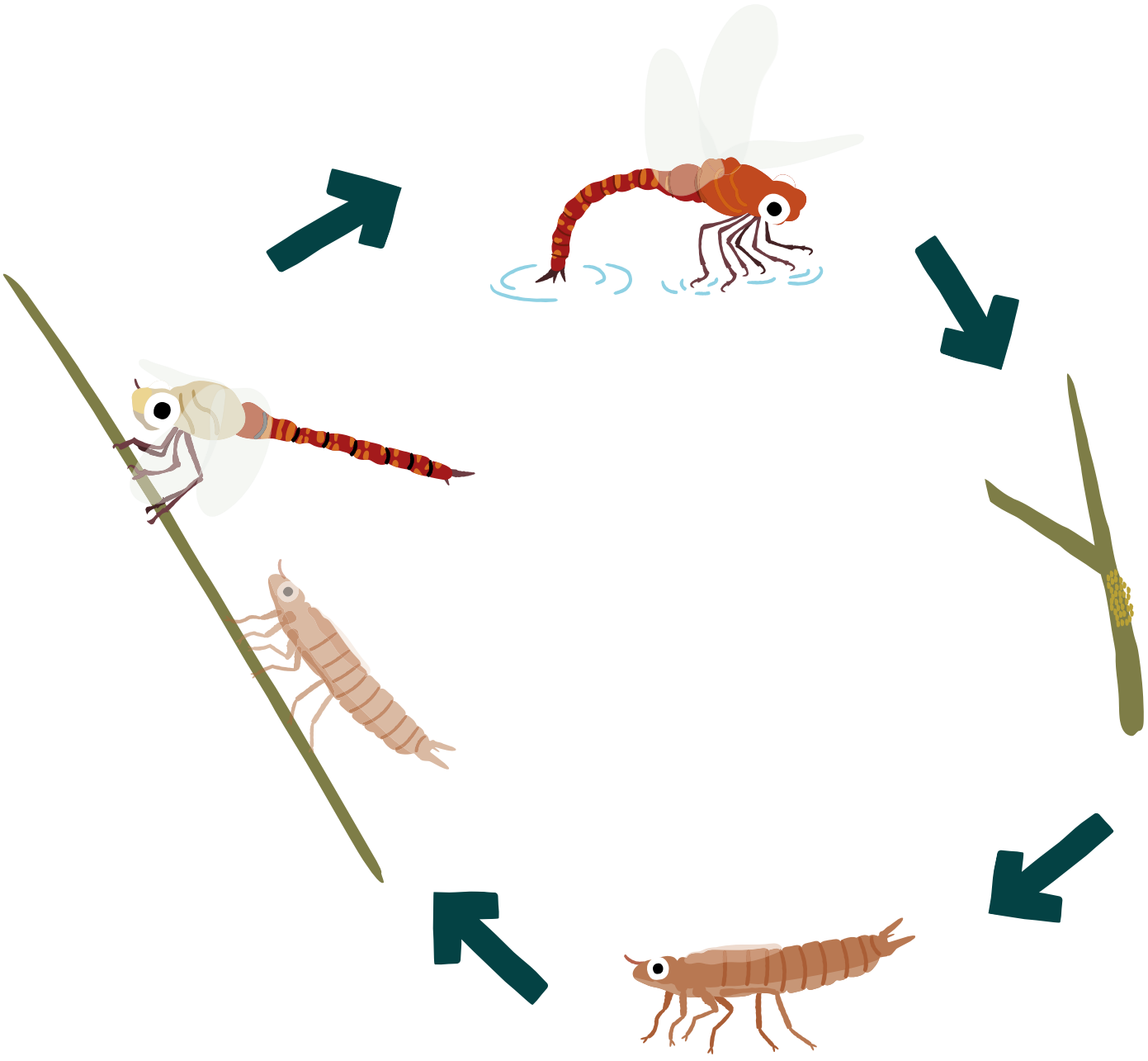
DRAGONFLY

Life cycle



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QUIZ: THE CIRCLE OF LIFE

Round 1: Picture round

Q Can you name each of the following?

1 .....

2 .....

3 .....

4 .....

5 .....

Round 2: Odd one out

Metamorphosis is when an animal changes shape completely as part of its life cycle. In each list below, only one creature goes through metamorphosis as part of its life cycle.

CIRCLE this animal each time...

6	Kingfisher	Daubenton's Bat	Toad	Water Vole
7	Dragonfly	Grass Snake	Grayling	Beaver
8	Water Vole	Heron	Eel	Mayfly
9	Stickleback	Newt	Coot	Otter
10	Duck	Water Vole	Damselfly	Swan

Round 3: Baby animal round

Q What are the young of each of the following animals called?

11 **Adult:** Otter
Young: .....

12 **Adult:** Swan
Young: .....

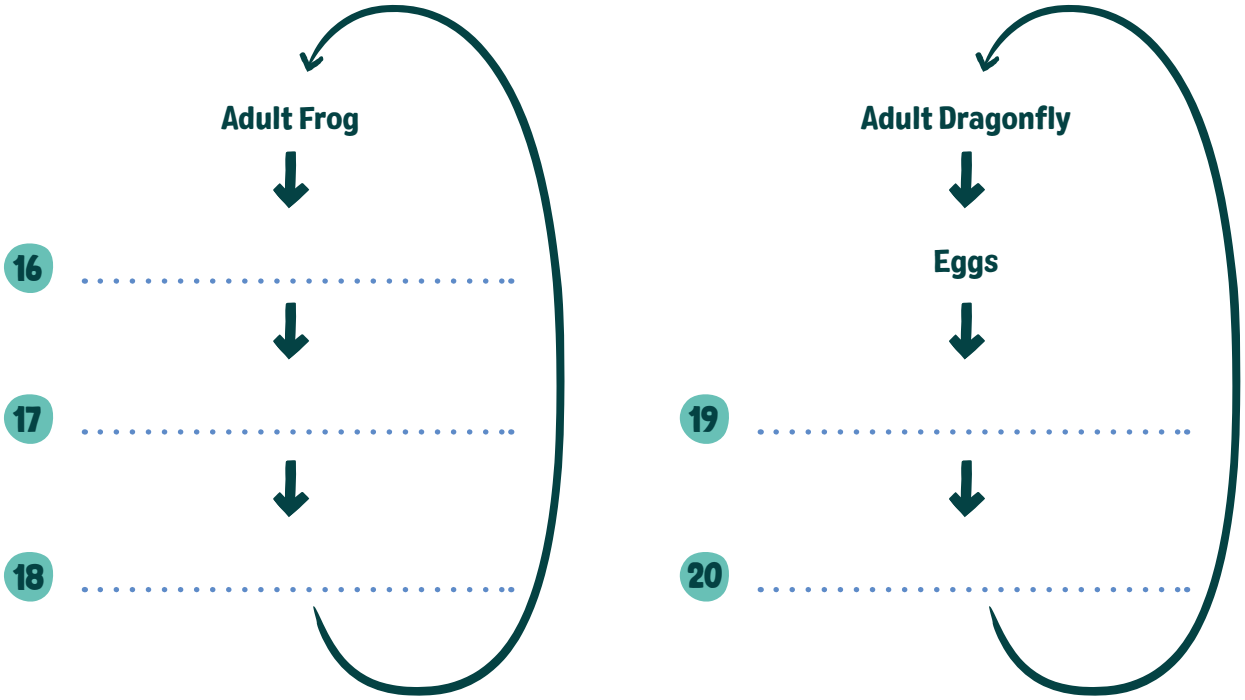
13 **Adult:** Bat
Young: .....

14 **Adult:** Eel
Young: .....

15 **Adult:** Goose
Young: .....

Round 4: Complete the life cycle round

Complete the missing parts of each of the following life cycles.



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@WWTWorldwide
Have fun and do share your score to our social media accounts
We'd love to find out how you got on!

ANSWERS: THE CIRCLE OF LIFE

Round 1: Picture round

Q Can you name each of the following?

1 Canada goose

2 Frogspawn

3 Dragonfly nymph (accept larva)

4 Otter

5 Tadpole

Round 2: Odd one out

Metamorphosis is when an animal changes shape completely as part of its life cycle. In each list below, only one creature goes through metamorphosis as part of its life cycle.

CIRCLE this animal each time...

6	Kingfisher	Daubenton's Bat	**Toad**	Water Vole
7	**Dragonfly**	Grass Snake	Grayling	Beaver
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Round 3: Baby animal round

Q What are the young of each of the following animals called?

11 **Adult:** Otter
Young: Pup (allow kit or kitten)

12 **Adult:** Swan
Young: Cygnet

13 **Adult:** Bat
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Young: Elver

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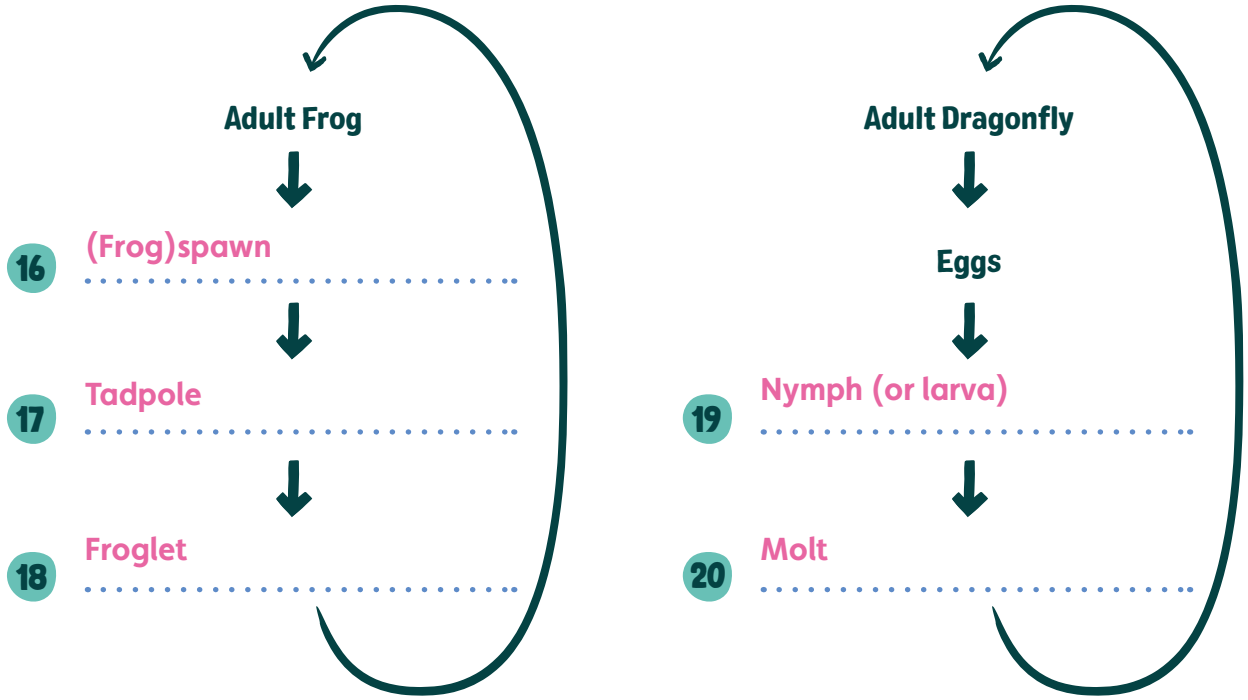

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