

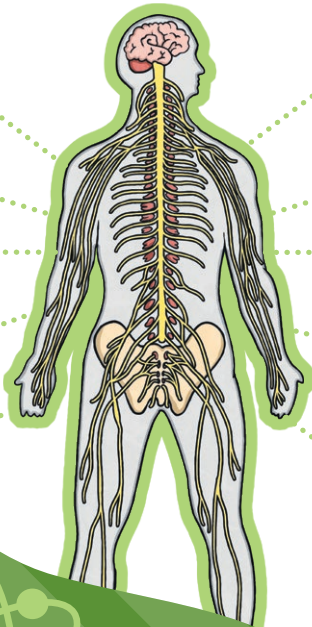
# Growth

## British Science Week

Every year, the British Science Association holds a ten-day celebration of science, technology, engineering and maths called British Science Week. Its aim is to create enthusiasm for science and the theme for 2022 is 'Growth'.

## Growth

Growth happens in many ways in the world around us. Every living thing is made up of cells and growth occurs when the cells increase in size, number or age. Growth can be seen in the evolution of technology or people's increased awareness of worldwide issues, such as climate change. Additionally, growth could measure someone's personal journey.



### Humans

It's important that humans have nutritious food, water and rest in order to grow. Firstly, a baby develops from a foetus inside the mother's womb for around nine months; this is known as the gestation period. The baby then grows and enters childhood. It is believed that the first five years of a child's life are the most important in terms of their development and there are usually many important milestones, such as a baby's first steps and their first words. Adolescence marks the phase where children develop further before they reach adulthood and then old age. Interestingly, although a newborn baby is small in size, they have 300 bones compared with an adult who has 206. This is because as a baby grows, their bones fuse together.

## Animals

In order to grow, animals require water, food, air and shelter. Animals are like humans and follow a life cycle where they grow and develop as they age and they often have their own young. The gestation period for animals is varied. A hamster's gestation period can be as short as 16 days whereas an African elephant's can be up to 680 days!



The life cycle of a butterfly is particularly interesting to observe in terms of its growth. The butterfly begins its life as a small egg, which is usually laid on a leaf. When the egg hatches, the caterpillar emerges. As the caterpillar eats, it begins to grow in size and expands, shedding its outer skin several times. When the caterpillar has reached its full growth, it turns itself into a pupa. This is where its incredible transformation called metamorphosis occurs. This stage can take from two weeks to several months and the butterfly emerges when it is fully developed.

## Plants

Plants need to have air, sunlight, nutrients and water. Pollen is transported by wind, water or animals in order for new seeds to grow. Seeds develop into plants during the germination process. Trees are among the longest-living things and the oldest tree recorded is believed to be in the United States of America and has been aged at over 5000 years old.

## Growth as Repair

Amazingly, some cells are able to repair damaged parts. Sometimes, the new growth may not look like the original cells, such as how a scar may form on a human after they have suffered a cut. Some animals are even able to grow missing parts. Incredibly, lizards can grow a new tail if they lose it!



# Questions

1. How long is the gestation period for a baby? Tick one.
  - ☐ ten weeks
  - ☐ four months
  - ☐ nine months
  - ☐ one year
2. Number the events from 1-4 to show the order in which a butterfly develops.
  - ☐ Metamorphosis takes place and a butterfly emerges.
  - ☐ An egg is laid by a butterfly on a leaf.
  - ☐ The caterpillar turns itself into a pupa.
  - ☐ A caterpillar emerges when the egg is hatched.
3. Look at the section called **Growth**.  
Find and copy one word which means the same as 'understanding' or 'knowledge'.

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4. What happens to lizards if they lose their tail?

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5. Fill in the missing word.

Plants need to have air, sunlight, \_\_\_\_\_ and water.

6. Why do you think it's important for animals to have shelter?

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7. ... the oldest tree recorded is believed to be...

Why do you think the author chose to use the phrase 'believed to be'?

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8. Comment on how the layout of the text may be useful for the reader.

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# Answers

1. How long is the gestation period for a baby? Tick one.
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  - ☐ four months
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2. Number the events from 1-4 to show the order in which a butterfly develops.
  - 4** Metamorphosis takes place and a butterfly emerges.
  - 1** An egg is laid by a butterfly on a leaf.
  - 3** The caterpillar turns itself into a pupa.
  - 2** A caterpillar emerges when the egg is hatched.
3. Look at the section called **Growth**.  
Find and copy one word which means the same as 'understanding' or 'knowledge'.  
**awareness**
4. What happens to lizards if they lose their tail?  
**If lizards lose their tail, they can grow a new one.**
5. Fill in the missing word.  
Plants need to have air, sunlight, **nutrients** and water.
6. Why do you think it's important for animals to have shelter?  
**Pupils' own responses, such as: I think it's important for animals to have shelter so that they are safe and protected from predators or the weather.**
7. ... **the oldest tree recorded is believed to be...**  
Why do you think the author chose to use the phrase 'believed to be'?  
**Pupils' own responses, such as: I think the author chose to use the phrase 'believed to be' because it is extremely hard to give an exact age to a tree so all recordings will be approximate.**
8. Comment on how the layout of the text may be useful for the reader.  
**Pupils' own responses, such as: I think the layout of the text may be useful for the reader because the writing is organised into sub-headings so it is easy for them to find different information quickly.**

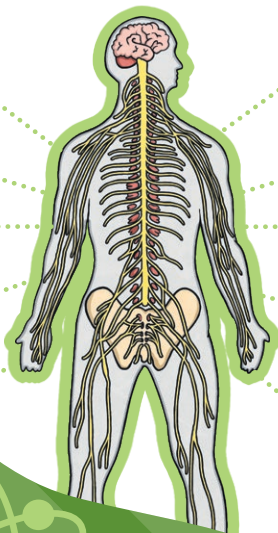
# Growth

## British Science Week

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## Growth

Growth happens in many ways in the world around us. Every living thing is made up of cells and growth occurs when the cells increase in size, number or age. Growth can be noted in the evolution of technology or people's increased awareness of worldwide issues, such as pollution or climate change. Additionally, growth could measure someone's personal journey and how they have developed in terms of their character.



## Humans

It's important that humans have nutritious food, water and rest in order to grow. Firstly, a baby develops from a foetus inside the mother's womb for around nine months; this is known as the gestation period. The baby then grows and enters childhood. It is believed that the first five years of a child's life are the most crucial in terms of their development and there are usually many key milestones, such as a baby's first steps and their first words. Adolescence marks the phase where children develop further before they reach adulthood and then old age. Interestingly, although a newborn baby is small in size, they have 300 bones compared with an adult who has 206; this is because as a baby grows, their bones fuse together, which means the actual number of bones in their body decreases.

## Animals

In order to grow, animals require water, food, air and shelter. Animals, like humans, follow a life cycle where they develop as they age and they often have their own young. The gestation period for animals differs significantly: a hamster's gestation period can be as short as 16 days whereas an African elephant's can be up to 680 days!



The life cycle of a butterfly is particularly interesting to observe in terms of its growth. The butterfly begins its life as a small egg, which is usually laid on a leaf. When the egg hatches, the larva - otherwise known as a caterpillar - emerges. As the caterpillar eats, it begins to grow in size and expands, shedding its outer skin several times. When the caterpillar has reached its full growth, it turns itself into a pupa, which is also known as a chrysalis. This is where its incredible transformation called metamorphosis occurs. This stage can take from two weeks to several months. The butterfly emerges when it is fully developed; it expands its wings and pumps blood into them before flying off.

## Plants

Plants need to have air, sunlight, nutrients (often found in the soil) and water. Pollination is essential for the reproduction of plants; this is when pollen is transported by wind, water or animals in order for new seeds to grow. Seeds develop into plants during the germination process. Trees are among the longest-living things and the oldest tree recorded is believed to be in the United States of America and has been aged at over 5000 years old.

## Growth as Repair

Amazingly, some cells are able to divide to repair damaged parts. Sometimes, the new growth may not look like the original cells, such as how a scar may form on a human after they have suffered a cut. Some animals are even able to regenerate missing parts. Incredibly, lizards can grow a new tail if they lose it and a salamander (a type of amphibian) can form a missing leg or eye!



# Questions

1. What hatches from a butterfly's egg? Tick one.

- ☐ larva
- ☐ pupa
- ☐ fly
- ☐ metamorphosis

2. Number the events from 1-4 to show the order in which a human develops.

- ☐ The baby grows and enters childhood.
- ☐ A human enters adulthood followed by old age.
- ☐ Adolescence marks the phase where children develop further.
- ☐ A baby develops from a foetus inside the mother's womb.

3. Look at the section called **Growth**.

Find and copy one word which means the same as 'development'.

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4. Where is the oldest tree recorded believed to be?

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5. Fill in the missing word.

Seeds develop into plants during the \_\_\_\_\_ process.

6. Why do you think the first five years of a child's life are believed to be the most important?

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7. Compare the similarities and differences between what plants and animals need in order to grow.

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8. **The gestation period for animals differs significantly...**

Why do you think the author chose to use the word 'significantly'?

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9. What impact do you think British Science Week has on young people?

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# Answers

1. What hatches from a butterfly's egg? Tick one.

- ☒ **larva**  
☐ pupa  
☐ fly  
☐ metamorphosis

2. Number the events from 1-4 to show the order in which a human develops.

- 2** The baby grows and enters childhood.  
**4** A human enters adulthood followed by old age.  
**3** Adolescence marks the phase where children develop further.  
**1** A baby develops from a foetus inside the mother's womb.

3. Look at the section called **Growth**.

Find and copy one word which means the same as 'development'.

**evolution**

4. Where is the oldest tree recorded believed to be?

**The oldest tree is believed to be in the United States of America.**

5. Fill in the missing word.

Seeds develop into plants during the **germination** process.

6. Why do you think the first five years of a child's life are believed to be the most important?

**Pupils' own responses, such as: I think the first five years of a child's life are believed to be the most important because there are many changes in a short time, such as learning to eat solid foods, crawling, walking and talking.**

7. Compare the similarities and differences between what plants and animals need in order to grow.

**Pupils' own responses, such as: Plants and animals need air, water and food to survive although plants obtain their food through nutrients often found in the soil. Animals also need shelter whereas plants need sunlight.**

8. **The gestation period for animals differs significantly...**

Why do you think the author chose to use the word 'significantly'?

**Pupils' own responses, such as: I think the author chose to use the word significantly because it emphasises that there is a notable difference between the gestation period between different animals.**

9. What impact do you think British Science Week has on young people?

**Pupils' own responses, such as: I think British Science Week has a positive impact on young people. It may show them how interesting science is and how it is connected to many different areas of life.**

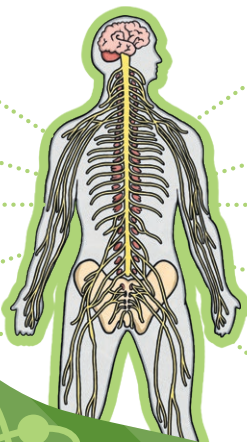
# Growth

## British Science Week

Every year, the British Science Association holds a ten-day celebration of science, technology, engineering and maths called British Science Week. The aim of British Science Week is to raise awareness and to stimulate enthusiasm for science, with people of all ages, through a range of interesting and creative activities. The theme for British Science Week 2022 is 'Growth'.

## Growth

The theme 'Growth' can be applied to multiple subjects. Every living organism is made up of cells and growth occurs when the cells increase in size, number or age. Growth can be observed in the evolution of technology over the years, the economy or people's increased awareness of worldwide issues, such as pollution or climate change. Additionally, growth could also be applied to someone's personal journey and how they have developed in terms of their character or wellbeing.



## Humans

One of the first concepts that people would automatically associate with growth is how humans develop and change over time. It's important that humans have nutritious food, water and adequate rest in order to grow. Firstly, a baby develops from a foetus inside the mother's womb for around nine months; this is known as the gestation period. The baby then develops and enters childhood. It is believed that the first five years of a child's life are the most crucial in terms of their physical and cognitive development and there are usually many key milestones, such as a baby's first steps and their first words. Adolescence marks the phase where children develop further before they reach adulthood and then old age. As muscles and organs develop during these different stages of life, humans also advance their knowledge and skills. Interestingly, although a newborn baby is small in size, they have 300 bones compared with an adult who has 206; this is because as a baby grows, their bones fuse together, which means the actual number of bones in their body decreases.

## Animals

In order to grow and develop successfully, animals require the following necessities: water, food, air and shelter. Adequate shelter is important to protect the animal from any predators or extreme nature. Animals, like humans, follow a life cycle where they grow and develop as they age and they often have their own offspring. The gestation period for animals differs considerably: a hamster's gestation period can be as short as 16 days whereas an African elephant's can be up to 680 days!



## Plants

Similar to how humans and animals need certain factors in order to develop well, plants require air, sufficient sunlight, nutrients (often found in the soil) and water. Pollination is essential for the reproduction of plants; this is when pollen is transported by wind, water or animals in order for new seeds to grow. Seeds develop into mature plants during the germination process. Trees are among the longest-living organisms and the oldest tree recorded is believed to be in the United States of America and has been aged at over 5000 years old.

The life cycle of a butterfly is particularly interesting to observe in terms of its growth as its physical development changes significantly. The butterfly begins its life as a small, cylindrical egg, which is usually laid on a leaf. When the egg hatches, the larva - otherwise known as a caterpillar - emerges. As the caterpillar eats, it begins to grow in size and expands, shedding its outer skin several times. When the caterpillar has reached its maximum growth, it turns itself into a pupa, which is also known as a chrysalis. This is where its remarkable transformation called metamorphosis occurs. This stage can take from two weeks to several months as the tissues break down and change. The butterfly emerges when it is fully developed; it expands its folded wings and pumps blood into them before flying off.

## Growth as Repair

Amazingly, some cells are able to divide to repair damaged parts. Sometimes, the new growth may not look like the original cells, such as how a scar may form on a human after they have suffered a cut. Some animals are even able to regenerate missing parts. Incredibly, lizards can grow a new tail if they lose it and a salamander (a type of amphibian) can form a missing limb or eye!



# Questions

1. Which animal's gestation period can be as short as 16 days? Tick one.

- ☐ hamster  
☐ lizard  
☐ salamander  
☐ African elephant

2. Draw **four** lines and match the process with the corresponding description.

germination	The transfer of pollen so that new plants can grow.
gestation	The development of a plant from a seed.
metamorphosis	The stage where the foetus develops inside the womb.
pollination	The process that a caterpillar goes through when it transforms into a butterfly.

3. Look at the section called **Humans**.

Find and copy one word which means the same as 'healthy'.

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4. Why does a baby have more bones than an adult?

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5. Fill in the missing word.

It is believed that the first five years of a child's life are the most \_\_\_\_\_  
in terms of their physical and cognitive \_\_\_\_\_.

6. Why do you think 'Growth' was an effective theme for British Science Week 2022?

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7. Compare the differences between a human's physical and personal growth. What changes may they go through?

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8. Look at the section **Animals**.

What impression does the word 'remarkable' give you about the author's point of view of metamorphosis?

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9. What else could the author have included in this text about growth?

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10. Summarise what you have learnt about the growth of plants in 25 words or fewer.

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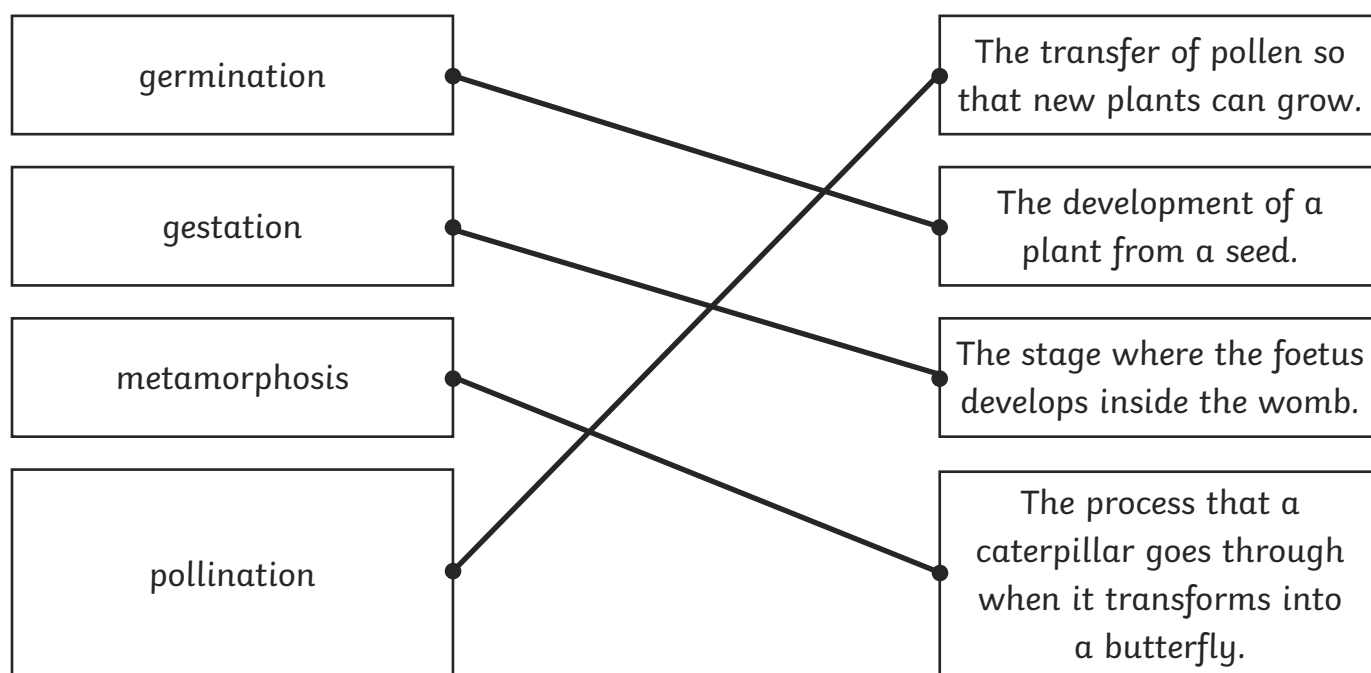
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# Answers

1. Which animal's gestation period can be as short as 16 days? Tick one.

- ☒ **hamster**  
☐ lizard  
☐ salamander  
☐ African elephant

2. Draw **four** lines and match the process with the corresponding description.



3. Look at the section called **Humans**.

Find and copy one word which means the same as 'healthy'.

**nutritious**

4. Why does a baby have more bones than an adult?

**A baby has more bones because as it grows, their bones fuse together.**

5. Fill in the missing word.

It is believed that the first five years of a child's life are the most **crucial** in terms of their physical and cognitive **development**.

6. Why do you think 'Growth' was an effective theme for British Science Week 2022?

**Pupils' own responses, such as: I think 'Growth' was an effective theme because it can be applied to many aspects of life, not just how living things grow but also the economy, how technology has changed and your own personality.**

7. Compare the differences between a human's physical and personal growth. What changes may they go through?

**Pupils' own responses, such as: As a human grows physically, their organs and muscles will develop. Personally, a human may have had experiences that have helped them become more determined.**

8. Look at the section **Animals**.

What impression does the word 'remarkable' give you about the author's point of view of metamorphosis?

**Pupils' own responses, such as: I think that the word remarkable gives the impression that the author is very impressed and amazed by the process of metamorphosis.**

9. What else could the author have included in this text about growth?

**Pupils' own responses, such as: I think that the author could have included more about different animals' life cycles in the text, such as how mammals grow compared to reptiles.**

10. Summarise what you have learnt about the growth of plants in 25 words or fewer.

**Pupils' own responses, such as: Plants need air, water, nutrients and sunlight to survive. They grow from seeds. Pollination is important to help plants reproduce.**