



Lifecycles and inheritance Level 2

Suggested Participants – p5-7

Farmers keep a wide range of different livestock. All of today's livestock originate from wild ancestors and have been selectively bred for specific characteristics. For example, cows have been selectively bred for beef production and for milk production. The two resulting types of cow are very different. This activity looks at where different farm livestock came from originally and how over time sheep and cows have been bred for specific characteristics.

What this pack contains:

- All the links and content required to deliver our 'Lifecycles and inheritance' activity.
- Learning Intentions, Success Criteria and Suggested Experiences & Outcomes.
- Learning for Sustainability links.
- Lesson plan.
- Suggested additional activities.

Learning Outcomes

- We are learning about mammal life cycles.
- We are learning about the diversity of living creatures.
- We are exploring and categorising characteristics.

Success Criteria

- I can construct a simple branched key.
- I can distinguish between inherited and non-inherited characteristics.
- I can discuss how creatures are suited to their environment.

Experiences and Outcomes

- **SCN 2-01a** I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction.
- **SCN 2-14a** By investigating the life cycles of plants and animals, I can recognise the different stages of their development.
- **SCN 2-14b** By exploring the characteristics offspring inherit when living things reproduce, I can distinguish between inherited and non-inherited characteristics.

Learning for Sustainability

- **Goal 4** Quality education: achieve literacy and numeracy.
- **Goal 12** Responsible consumption and production ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.



Lifecycles and inheritance Level 2 Lesson Plan

Introduction

- Share/discuss the learning intentions and success criteria.
- Talk to your class about the sheep lifecycle. You can watch the following videos to find out more about different parts of the lifecycle – [scanning](#), [lambing](#) and [shearing](#). Use the living life cycles worksheet to cut out and stick down the sheep lifecycle in the right order.
- Find out more about inheritance with the wool colour worksheet. Finally have a go at matching the farm animal to the country it originates from.

Suggested discussion points

- What characteristics do farm animals have to survive in the environments they originated from?
- What characteristics do you have that are inherited?
- How is a mammals life cycle different from a bird/amphibian/reptile life cycle?
- How are characteristics passed from one generation to the next?

Learning

- **Science outcomes:** The ability to identify inherited and non-inherited characteristics. The ability to discuss the lifecycle of a sheep. The ability to relate physical characteristics linked to the environment. The ability to construct a branching key.

Additional tasks

- We have a wide range of different videos looking at different farm systems. You can find out more about [hatching eggs](#) and [have a tour of a dairy farm](#) to find out more about the lifecycle of a dairy cow.

More information

- Find out more about life cycles and food webs with our '[Story of dung resource](#)'.

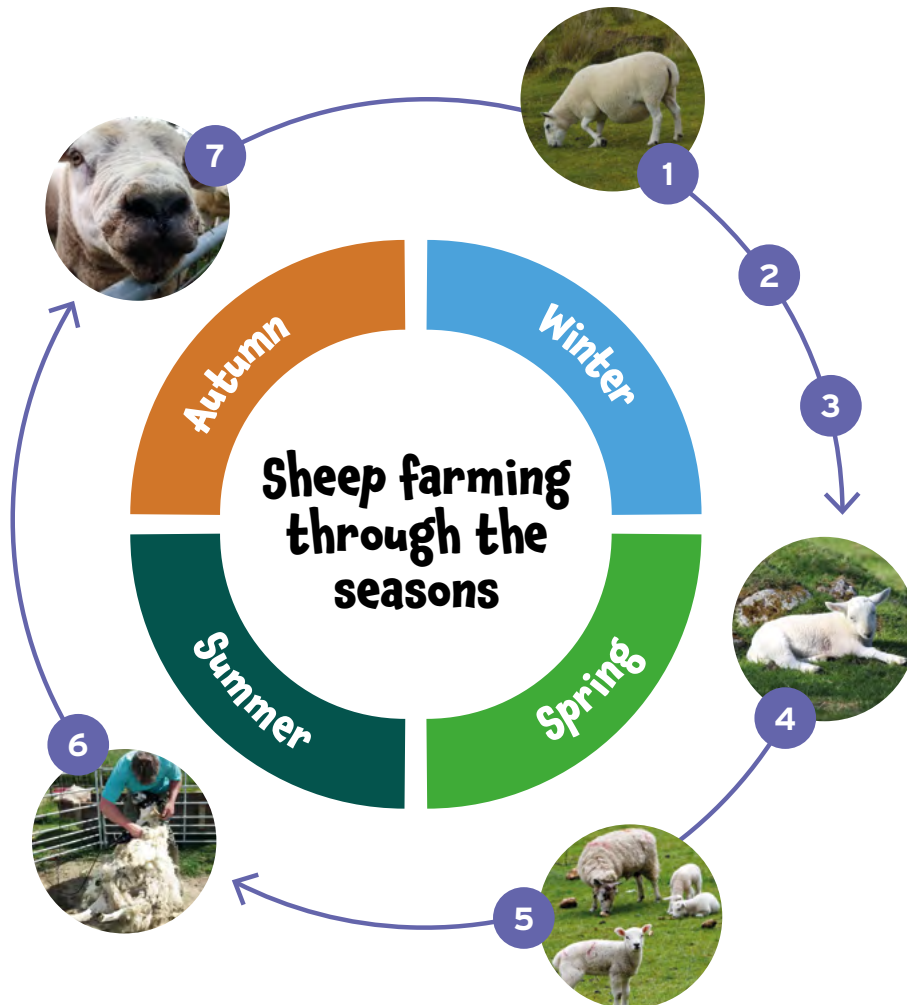
Social media

- Please tag [@TheRHET \(Twitter\)](#) or [@TheRoyalHighlandEducationTrust \(Facebook\)](#) in your lesson photos/comments.

Worksheet 1. The sheep lifecycle

The following boxes all contain sections of a sheep lifecycle.

Can you cut them out and stick them onto the lifecycle in the correct place?



The males (rams) join the ewes (females) in the fields for mating.



In late Summer, early Autumn the first of the years lambs are sold.



Sheep are pregnant for 148 days.



Lambs are born in the Spring when the grass starts to grow.



The farmer scans the ewes to find out how many lambs they are carrying



In the summer all the adult sheep on the farm are sheared



The lambs stay with their mother though the Spring and into the Summer

Using the words provided and your sheep lifecycle can you answer the following questions:

A female sheep is called a _____

A male sheep is called a _____

A young sheep is called a _____

Farmers can find out how many lambs a sheep is expecting by _____
their sheep

Most lambing in Scotland happens in the _____

ram

scanning

Spring time

ewe

lamb



Worksheet 2. Which wool colour?



Herdwick sheep



Jacob sheep



Soay Sheep

There are many different breeds of sheep and different breeds have different colours of fleece.

In Scotland the majority of breeds have white wool. However, there are also breeds with different colours of wool. Hebridean sheep have dark black wool, Soay sheep have brown wool, Jacob sheep have a mixture of black and white wool and Herdwick sheep have a blue-grey fleece.

The colour of sheep's wool is determined by the genetic code it received from its parents.

For this example, we are assuming a single pair of genes determines wool colour.

The two genes involved are

1. a gene for white wool (with the symbol W)
2. a gene for coloured wool (with the symbol c)

Each sheep will have two genes for fleece colour - one from its mother (ewe) and the other from the father (ram).

If a sheep has just one gene for white wool, it will be white (even if the other gene it has is for coloured wool). In order to have coloured wool, the lamb needs to have both coloured wool genes. This means that the white wool gene is dominant.

Gene from mother	Gene from father	Lamb fleece colour
W	W	WW = white fleece
c	W	Wc = white fleece
W	c	Wc = white fleece
c	c	cc = coloured fleece

Lets see if you can work out the fleece colour from the following pairings:

Pair 1



The female is a Hebridean ewe with the genetic code cc for wool colour.

	W	W
c	Wc	Wc
c	Wc	Wc



The male is a Suffolk ram with the genetic code WW for wool colour.

What percentage of lambs from this pairing will have white fleece?

Pair 2



The female is a Hebridean ewe with the genetic code cc for wool colour.

	c	c
c	cc	cc
c	cc	cc



The male is a Hebridean ram with the genetic code cc for wool colour.

What percentage of lambs from this pairing will have coloured fleece?

Pair 3



The female is a ewe with the genetic code Wc for wool colour.

	W	c
W	WW	Wc
W	WW	Wc



The male is a Suffolk ram with the genetic code WW for wool colour.

What percentage of lambs from this pairing will have white fleece?

Pair 4



The female is a ewe with the genetic code Wc for wool colour.

	W	c
c	Wc	cc
c	Wc	cc



The male is a Hebridean ram with the genetic code cc for wool colour.

What percentage of lambs from this pairing will have white fleece?

Worksheet 3. Inherited and non-inherited characteristics

Inherited characteristics are carried on gene that are inherited from parents. Fleece colour is an inherited characteristic.

Non-inherited characteristics are not inherited but caused by the environment that the organism lives in. Below are some further sheep characteristics.

Can you work out if the characteristic is inherited or non-inherited and add it to the correct column?



Horns

Sound of baa

Inverted eyelids

Weight of fleece

Tail length

Worm load

Inherited characteristics

Non inherited characteristics

Inherited characteristics

Non inherited characteristics

Worksheet 4. Where in the world.....

Farmers in Scotland keep a wide range of livestock for their meat, milk and eggs. All these animals have been adapted over time through breeding to live close to people and to maximise the product they produce.

1. Can you work out where in the world these animals came from originally? Draw a line from the animal to the location on the map



2. Choose one of the animals. Which characteristics does it have that make it well suited to the natural environment it originally comes from?