

This text is about the way that humans have used animals for food and work, and what makes animals suitable or unsuitable for this.

Animal management

You might think that humans have conquered the globe thanks to our superior brain power. World-changing discoveries such as fire, inventions like the wheel and our ability to communicate through language have all certainly helped! However, another secret to humans' success has been our ability to domesticate animals. Humans around the world have been doing this successfully for thousands of years. But what is domestication?



Domestication describes the process of changing animals over many generations so that they (and their descendants) can live with and benefit people.

Some animals – such as dogs, cats and rabbits – are domesticated as pets, whereas livestock animals are domesticated to provide food and clothing, or are used for work on farms.

Although small mammals, poultry, fish and even insects have been domesticated, historically the most important livestock animals have been the large mammals, those generally weighing over 45 kilograms. These provide the most food and can do the heaviest work. Of the large land-based mammals, only five have been successfully domesticated throughout the world: the sheep, goat, cow, pig and horse. Nine others, including the donkey, reindeer and camel, have been domesticated in certain parts of the globe only.



You will not see a gorilla or a hippo working on a farm, so why have some species of mammal been domesticated while others have not? Not all animals can be domesticated – and even those that have, can sometimes revert to their wild ways.

On the following pages, the internationally published biologist Jared Diamond proposes a list of characteristics that animals need to possess in order for them to be successfully domesticated. Lacking even one of these characteristics usually means that domestication fails.



Requirements for Domestication

Diet – For an animal to grow to full size, it takes an awful lot of food. Domesticated animals need to eat food that is relatively cheap and easy to grow, such as grass or grain, so herbivores like cattle and sheep are ideal candidates. Animals that are finicky in their food preferences simply won't do.



Facts about feeding

The elephant, rhinoceros and hippo are all herbivores: they live on plant matter and lack the sharp teeth needed to tear meat.

We think of dogs as carnivorous, since they mostly eat meat, but they are capable of surviving on grain and fruit products.

Growth rate – To be worth keeping, domesticated animals must grow quickly. That cuts out gorillas and elephants, for example, even though both are herbivores prepared to eat a wide range of foods. No farmer would be prepared to wait 15 years for their herd to reach adult size. Elephants are tamed for work in some countries, but they are usually taken fully grown from the wild.

Breeding in captivity – Domesticated animals need to breed easily in captivity. Cheetahs were much prized by the ancient Egyptians as hunting animals, but they were never successfully bred in captivity. It seems that cheetahs need an elaborate courtship ritual that involves running large distances, which is incompatible with being in a confined space.



Character – A tendency to kill people causes immediate disqualification for many candidates that otherwise seem ideal. Think of the grizzly bear: it grows relatively quickly, to an enormous size, on a broad and mainly vegetarian diet, and thrives on human rubbish. If only they would do as they're told! A hippo would be a great barnyard animal if it wasn't so lethal. They kill more people each year than any other African mammal, including even the lion. Although you might expect zebras to behave like their equine relatives, horses and donkeys, in fact they grow consistently more vicious and likely to bite as they age.

Response to danger – When faced with a threat, some species, such as antelope, are nervous and inclined to flee immediately, while others stand their ground. The nervous ones are not suited to captivity: in an enclosure they are likely to panic, and may even die of shock.

Hierarchy – Almost all species of domesticated large mammals had wild ancestors that lived in herds, with a well-developed dominance hierarchy. This arrangement allows many animals to exist peacefully together without constant fighting. All humans need to do in order to control the animals is to become dominant in the hierarchy.

Animals used to being in herds can tolerate crowded conditions, and can be readily driven by a shepherd or a sheepdog. One domesticated animal is an exception to this: no-one has worked out how to herd cats. Their value to humans is as solitary hunters or pets.

You can see that domestication is actually a tricky business. Not all animals make the grade. So the next time you pass a herd of grazing herbivores stop and think: where would we be without them?



Being the boss

The head of a social group or dominance hierarchy is often described as 'top dog', the one who gets compliance - or obedience - from those below.

1. Look at the first paragraph, beginning: *You might think that humans...*

Find and **copy two** phrases from this paragraph that suggest that humans have been successful as a species.

1. _____

2. _____

1 mark

2. *You will not see a gorilla or a hippo working on a farm...*

What explanation is given in the text for why you don't see gorillas on farms?

1 mark

3. How does the text suggest that we should accept Jared Diamond's ideas?

1 mark

4. Complete the table below to show how the hippo appears both suitable and unsuitable for domestication according to the text.

a) Feature that makes the hippo suitable	b) Feature that makes the hippo unsuitable
_____ _____	_____ _____

2 marks

5. Look at the section headed **Character**.

Why does the text list so many of the characteristics of the bear?

Explain fully, referring to the text in your answer.

1 mark

6. Draw a line to match each animal with the main reason given in the text that it is not domesticated.

cheetah •

• grows too slowly

zebra •

• flees from danger

elephant •

• develops aggressive behaviour

antelope •

• will not breed

1 mark

Mark schemes

Q2.

- 1 Award **1 mark** for any **two** of the following:
1. *World-changing (discoveries such as fire)*
 2. *(humans have) conquered the globe*
 3. *(thanks to our) superior brain power*
 4. *(our) ability to communicate through language*
 5. *inventions (like the wheel)*
 6. *(our) ability to domesticate animals*
 7. *(another) secret to humans' success*
 8. *(Humans around the world have been) doing this successfully for thousands of years.*
- 1 mark**
- 2 Award **1 mark** for answers that identify that gorillas grow slowly, eg:
- *they do not grow quickly enough.*
- Also accept** quotations that meet the acceptable point, eg:
- *No farmer would be prepared to wait 15 years for their herd to reach adult size*
 - *Domesticated animals must grow quickly.*
- 1 mark**
- 3 Award **1 mark** for answers that identify any of the following:
1. he is a biologist / scientist / expert
 2. he is internationally known
 3. he is a published author / has written books
 4. he provides a lot of facts / examples
 5. he gives examples to support his ideas / explains in detail.
- 1 mark**
- 4 (a) Award **1 mark** for answers that identify either of the following features:
1. it is a herbivore / it is easy to feed, eg:
 - *they live on plant matter*
 - *it's a vegetarian.*

2. it is large, eg:

- *it's a really big animal.*

1 mark

(b) Award **1 mark** for answers that identify that hippos are dangerous / lethal / aggressive / violent, eg:

- *they can attack humans*
- *'They kill more people each year than any other African mammal.*

1 mark

5 Award **1 mark** for answers that identify either of the following reasons:

1. despite the bear's apparent suitability for domestication, it isn't suitable, eg:

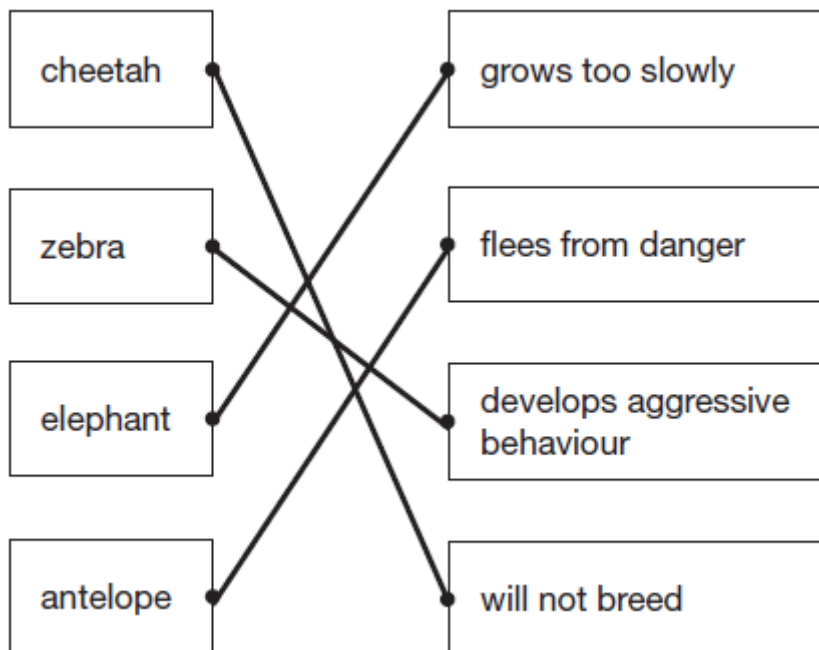
- *because it starts off with them good, 'It grows quickly', 'is a good vegetarian' but ends with the real truth, they kill*
- *apart from being unruly (not doing as told) all other traits fit perfectly.*

2. despite the many positive characteristics of the bear, one failed criteria can rule it out, eg:

- *it is a good example because it has so many of the good characteristics, but just one thing can make it impossible to domesticate.*

1 mark

6 Award **1 mark** for all boxes correctly matched:



1 mark