

**SPCA Auckland Education
Teacher Guide Sheet**



**'The Evolution of the Pet Dog' Level 3 NCEA
Biology Year 13**

Achievement Objective 8.2(b)

'Investigate and explain speciation and identify patterns of evolution, with emphasis on NZ examples'.

Achievement standard 90717

'Describe Patterns of Evolution'

SPCA Auckland Education Secondary School Level



'The Evolution of the Pet Dog' Worksheet Year 13

An example of a 'Cline'

A gradual change in species is called a **cline**.

Dogs show a continuous gradation from the tiny Chihuahua (15cm high and weighing 1.8 kg), to the huge Mastiff (weighing upwards of 90 kg) and the tall Great Dane (upwards of 90 cm in height).

They are able to coexist in the same geographical area due to human intervention in their environment.

In this activity physical measurements will be taken to compare the sizes of different species of dogs. Measurements will be pooled. 30 dogs of at least 10 different breeds need to be surveyed.

WARNING: Only work with dogs that you know and are friendly. If you are not confident, ask the owner to do the measurements for you.

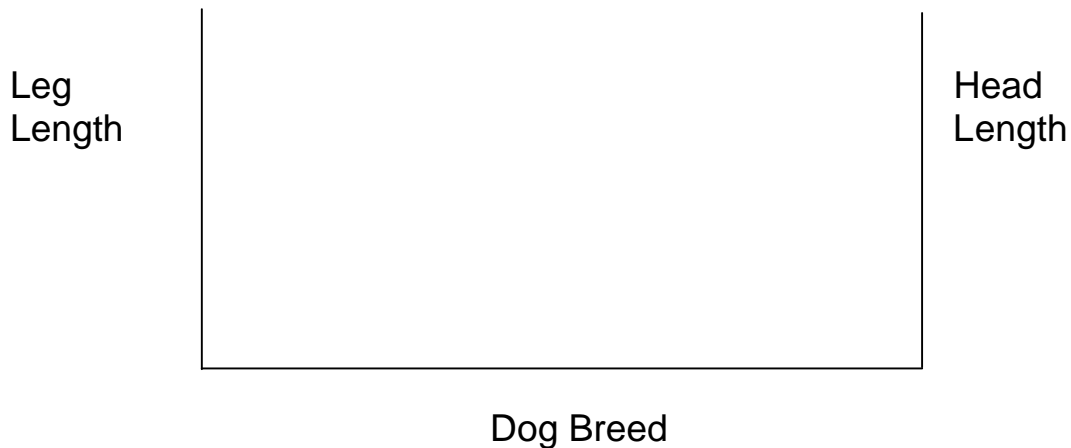
Measurement

1. Measure the length of the outstretched hind leg from the hip 'ball and socket' to the tip of the claw. This is most easily done with a dog that is lying down on its side or back.
2. Measure the length of the head from the back of the sagittal crest (the bump on the back top of the skull) to the end of the nose, in a straight line.
3. Repeat these measurements. Record your information in a chart of breed/hind leg length/head length (if a dog is a cross, list it's parentage).



4. Share your findings with the class. Then graph your results as follows:

Note: when you have measurements from more than one dog of the same breed, average the data.



Can all dogs mate with each other?

1. Look at the hind leg measurements. List reasons why this data can determine whether or not one breed can mate with another.
2. Assume that anything more than a 50% difference in leg length between male and female makes it physically difficult to mate.



Work out for each breed, the following:

Dog breed selected = _____
Leg length of selected breed = _____
Range that it can be mated with = _____
Dog Breeds that fall into this range are;

3. Using the simplest definition of a species, list breeds which belong to the same species.
4. Explain how this definition may falter in the case of the domestic dog.
5. Explain how domestic dogs have become a clinal species.