

Genetic variation

4A

Mr. Erick Santizo

Introduction

- Genetic variation

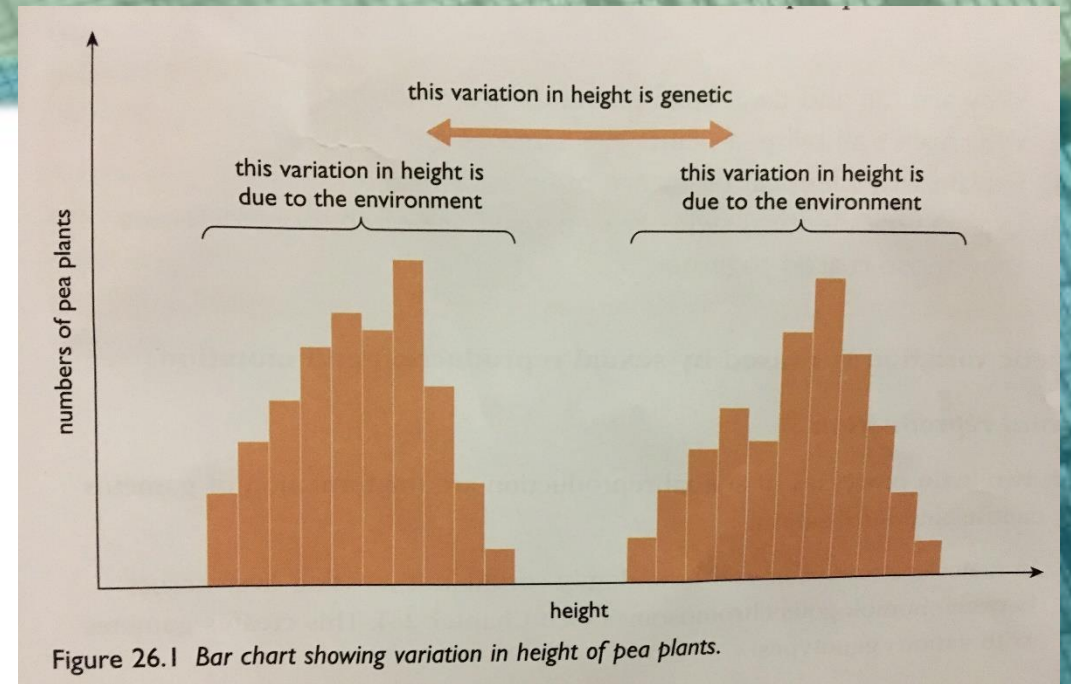
1. Inherited

2. Environmental factors.

- a. Plants: light, water & ions, CO₂.

- b. Humans: Identical twins

- Grow may be different environments, physical, social and intellectual developments.

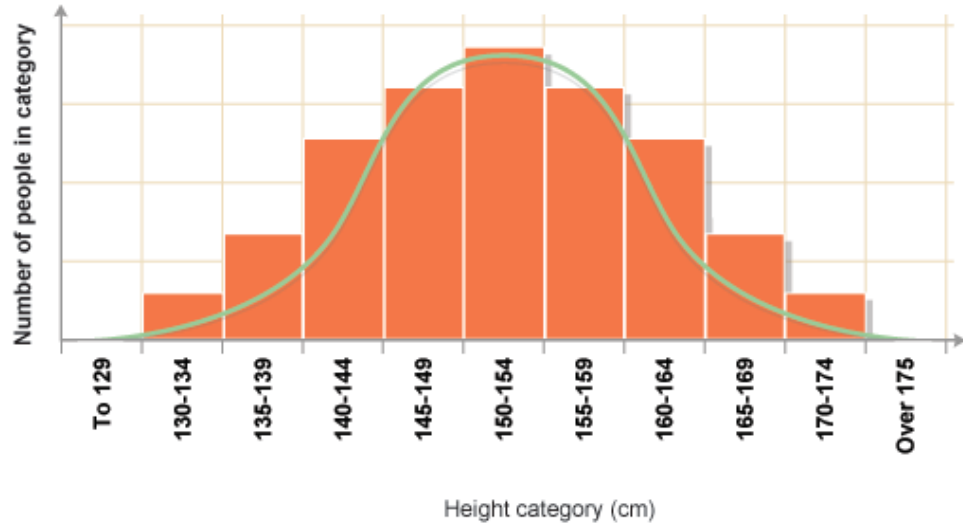


Explore: continuous and discontinuous variation

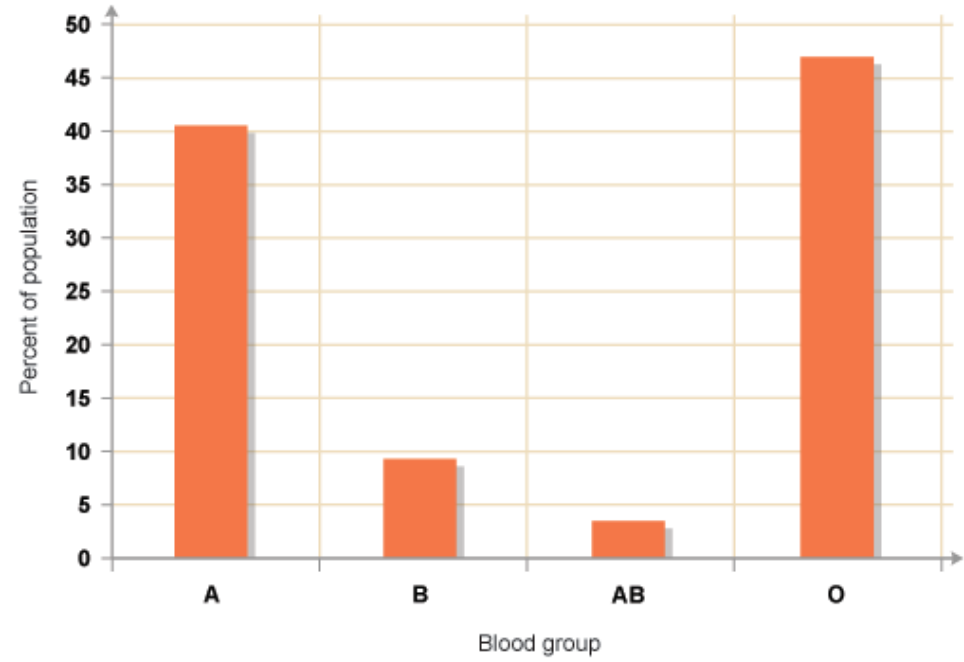
- **Variation** is all the differences which exist between members of the *same species*.
- Continuous variation is variation that has no limit on the value that can occur within a population. A line graph is used to represent continuous variation. Some examples are :height, weight, heart rate, finger length and leaf length
- Discontinuous variation is variation that has distinct groups for organisms to belong to. A bar graph is used to represent discontinuous variation.
- Some examples are: tongue rolling, finger prints, eye colour, blood groups



A



B

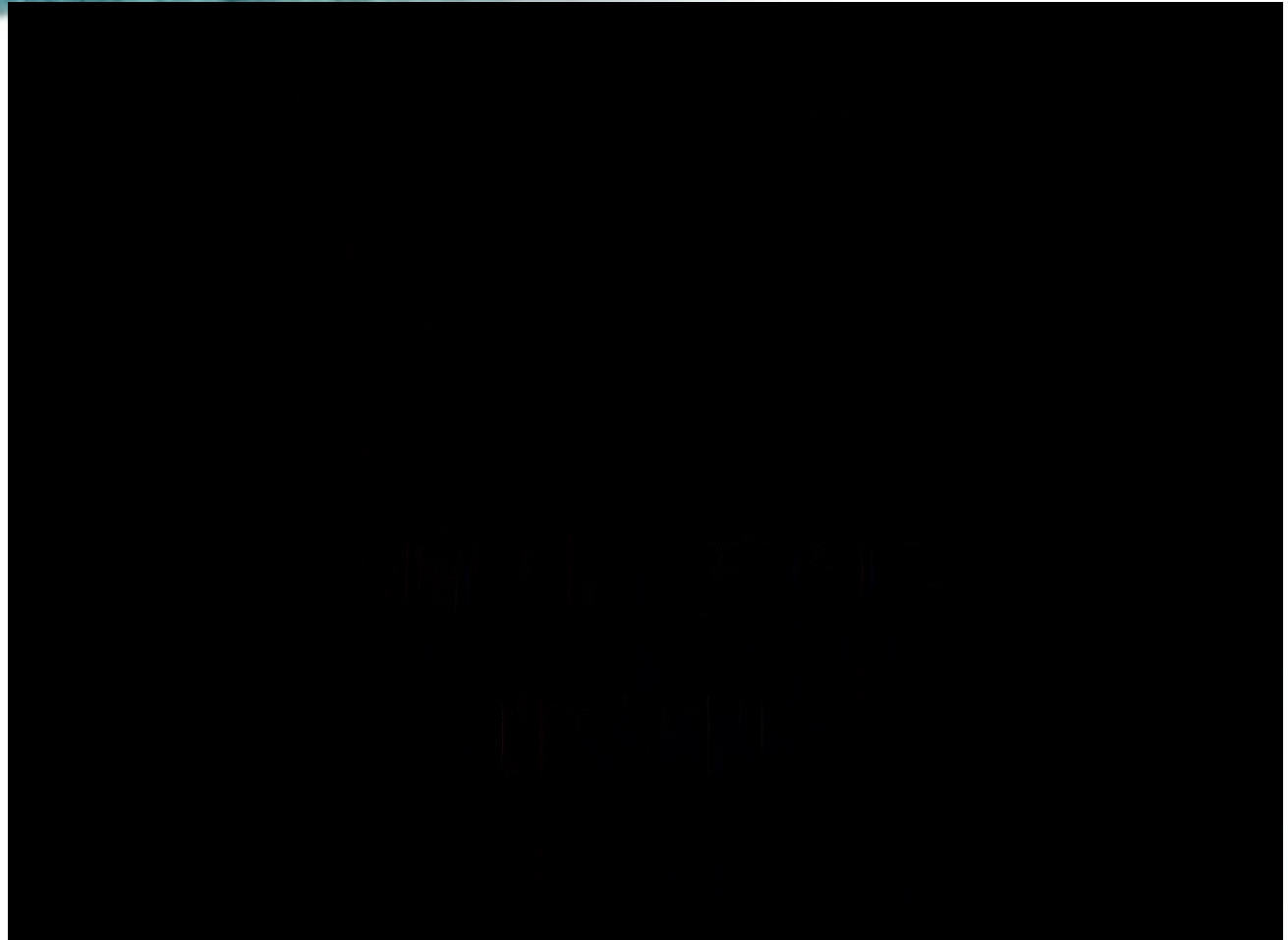


Explore 1:

- - Students will get into groups of four, Teacher will ask students to pick **one** discontinuous and **one** continuous variation for them to research on 10 of their classmates.
- - Students will save their results and plot it as a bar graph and line graph (for homework).
- 2 graphs per group.

Elaboration: causes of genetic variation

1. Sexual
reproduction
2. Mutation



Closure:

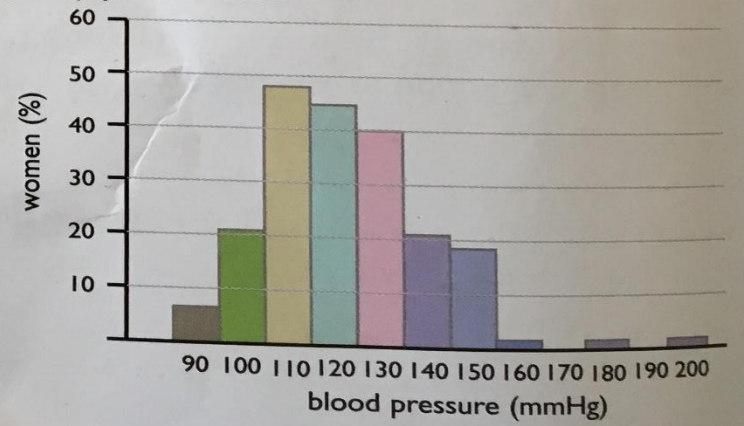
- Variation in which there are only a few categories is called:
 - continuous variation
 - discontinuous variation
 - proportionate variation
 - disproportionate variation
- Which one of the following statements is the **least** accurate?
 - Discontinuous variation results entirely from genetic differences.
 - Continuous variation can result from genetic differences.
 - Discontinuous variation cannot be altered by environmental effects.
 - Continuous variation results from environmental effects.
- Which types of variation can be inherited?

	Variation caused by genes	Variation caused by the environment
A	yes	yes
B	yes	no
C	no	yes
D	no	no

- Do environmental or genetic factors cause the differences we see in plants with an identical genetic make-up?
 - List some of the advantages of breeding plants that have the same genetic make-up.
 - Explain why breeding a population of identical organisms can be disadvantageous. (5)
- Complete the table by classifying each of the following variations based on what causes them:
obesity, eye colour, tallness, singing ability, blood group, natural hair colour; sickle-cell anaemia, agility

Genetic effects only	A combination of genetic and environmental effects

- For each variation in question 5, give two examples in human populations of:
 - continuous variation (5)
 - discontinuous variation. (2)
- Give three examples of types of competition that occur between members of an animal species in the same population. (6)
 - In each case, suggest a variation that might help an individual to compete more effectively.
- The histogram shows the range and frequency of particular blood pressures (systolic) in a group of women in the 30–39 age group.
 - Based on this evidence, could you say that blood pressure is a discontinuous variable?
 - Justify your answer.



Variation in blood pressure in women aged 30–39.