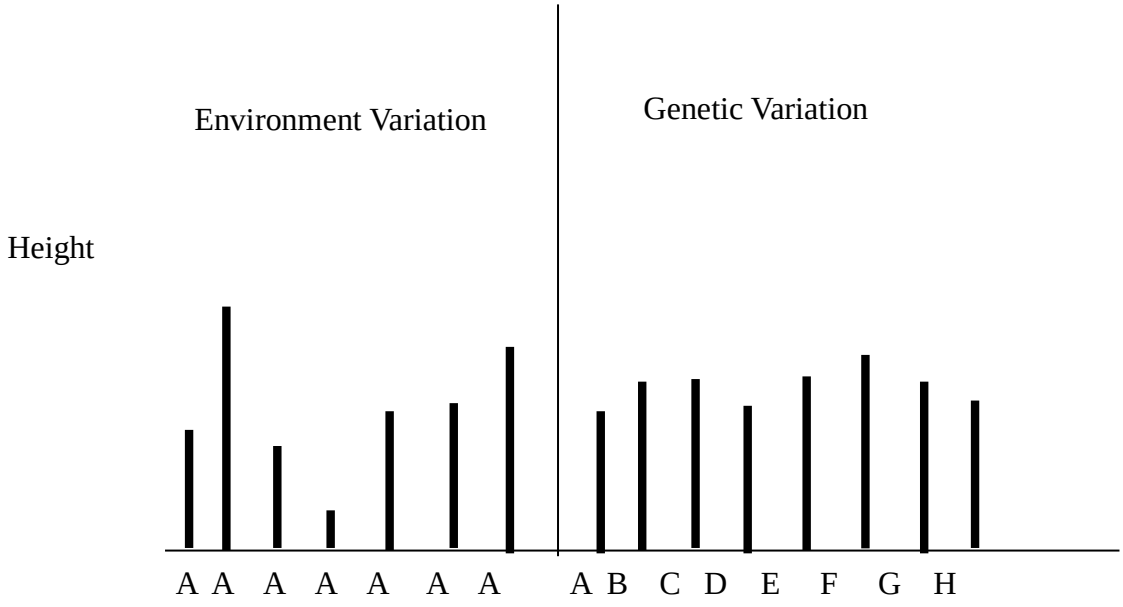
CONCEPT: ANALYZING TRAIT VARIATION

- Trait variation can be caused by genetic and environmental _____
  - □ The formula used to calculate phenotypic variation is: $V_P = V_G + V_E$
    - Phenotypic variance = V_P
    - Genetic variance = V_G
    - Environmental variance = V_E
  - □ To determine the variation attributed to genetics you must control for _____
    - If you are looking for how much genetic variation contributes to stem height in one species of flowers then:
      - Plant multiple seeds from one species in a carefully controlled greenhouse ($V_E = 0$)
  - □ To determine the variation attributed to environment you must control for genetics
    - How much environmental variation contributes to stem height in one species of flowers?
      - Plant multiple genetically identical seeds in many different environmental conditions ($V_G = 0$)

EXAMPLE:



PRACTICE:

1. Which of the following represent trait variation caused from genetic variation?
    a. V_P
    b. V_G
    c. V_E
    d. V_V

2. If you wanted to identify what proportion of trait variation is due to the environment, you would do what?
    a. Control for environmental variation
    b. Control for overall variation
    c. Control for genetic variation
    d. Control of phenotypic variation

3. If you wanted to identify what proportion of trait variation is due to genetics, you would do what?
    a. Control for environmental variation
    b. Control for overall variation
    c. Control for genetic variation
    d. Control of phenotypic variation