

NAME: _____ DATE: _____ PERIOD: _____

INTERPRETING INFORMATION IN A PEDIGREE

Background

Organizing information is often the key to solving a problem. Tracing the hereditary characteristics over many generations can be especially confusing unless the information is well organized. In this activity, you will learn how to organize hereditary information, making it much easier to analyze. A **pencil** is usually used when working pedigree problems.

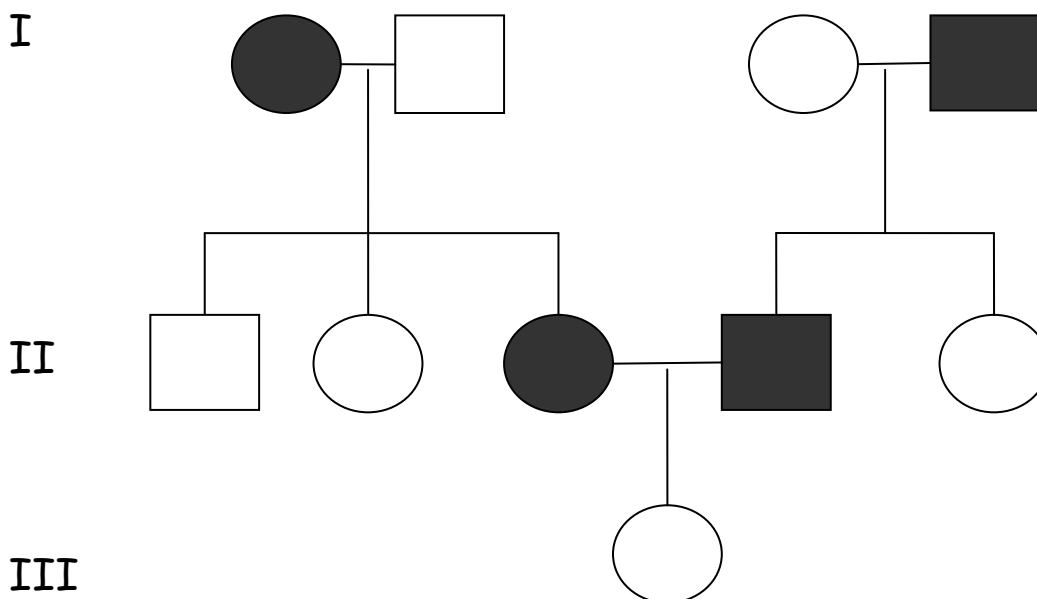


Objective

In this activity you will construct and analyze a pedigree.

Practice-1

Pedigree I traces the dimples trait through three generations of a family. **Blackened** symbols represent people with **dimples**. **Circles** represent **females** and **squares** represent **males**.



The following passage describes the family shown in Pedigree I.

Although **Jane and Joe Smith have dimples**, their daughter Clarisse does not. Joe's **dad has dimples**, but his mother and his sister, Grace, do not. Jane's dad, Mr. Renaldo, her brother, Jorge, and her sister, Emily, do not have dimples but her **mother does**.

Practice Evaluation

1. Write the **name** of each person **below** the correct shape in Pedigree 1, along with **possible genotypes**
2. How are marriage and offspring (babies) symbolized?
3. What do the Roman numerals (I, II, III) symbolize?

Practice-2

Make a pedigree based on the following passage about freckles. Freckles is **dominant** over no freckles. Write the **name** of each person below the correct shape in Pedigree 2, along with **possible genotypes**. **READ THE WHOLE PASSAGE FIRST!**

Andy, Penny, and Delbert have freckles, but their mother, Mrs. Commins does not. Mrs. Giordano, Mrs. Commins' sister, has freckles, but only one of her parents, Mr. Lutz has freckles. Deidra and Darlene Giordano are freckled, but their sister, Dixie, like her father is not freckled.

Analysis

- 1) **Evaluating Techniques:** What **advantages** does a pedigree have over a written passage?
- 2) **Summarizing Observations:** How does a pedigree **organize** hereditary information, making it easier to understand?

How important is heredity with freckles? The answer, it now appears, is: "Very important." In studies of twins, including pairs of identical twins and pairs of fraternal (non-identical) twins, it has been found that among identical twin pairs, there was a striking similarity in the total number of freckles found on each person. Such similarities were considerably less common in fraternal twins. This clearly confirms that the occurrence of freckles is influenced by genetic factors. In fact, the variations in freckle counts appear to be due largely to heredity. Freckles are said to be inherited in an **autosomal dominant** manner; one parent does pass the gene for freckles to an offspring. There is, however, always a possibility for a new mutation to occur and freckles could appear in a family without a previous history.

Resource of pedigree symbols: <http://www.bhs.jordan.k12.ut.us/~science/genetics/humgen.htm>