

PEDIGREE CHEAT SHEET

- Option 1 (first page): students determine which pedigree represents which trait. It is recommended to do this together as a class, as a discussion to work through each pedigree.
- Option 2 (second page): Just a simple cheat sheet. Also serves as answer key to first page.

PEDIGREE CHEAT SHEET USES

- To have handy for beginners to navigate through worksheets
- To use for students with IEPs who need extra resources
- To use during an open note quiz or during a test

PEDIGREE TIPS

- Introduce carriers after you've done a basic lesson on pedigrees.
- X linked recessive and autosomal recessive can be VERY similar. To help students navigate this, you can give them the pattern of inheritance, and have them explain WHY it's this pattern. This is a more effective way of testing their understanding.
- Pedigrees are a great tool for students to navigate critical thinking skills. If the pedigrees are too complicated, this can prohibit some productive thought flow, and lead to frustration. I'd recommend keeping pedigrees simple, and you can add more difficult ones as you go, or as bonus work.

OTHER PEDIGREE RESOURCES (PAID):

blue people OF TROUBLESOME CREEK
pedigree activity

THE BLUE PEOPLE OF TROUBLESOME CREEK

ENGAGING & COMPREHENSIVE PEDIGREE ACTIVITY

pedigree practice
Practice Sheets

Autosomal dominant

2 WORKSHEETS. GRADES 7 AND UP. EDITABLE.

Types of Traits
We have a total of 23 pairs of homologous chromosomes. 22 of these pairs are autosomal (found in body cells). 1 of these pairs are sex chromosomes (found in egg or sperm). Female pair XX, Male pair XY

Alleles
Homologous chromosomes separate during meiosis; the offspring receives one copy of a gene from each parent.

Looking at Pedigrees
Example: Autosomal Dominant Disorder

Types of Traits (continued):
If a trait is autosomal, that means the trait is on one of the 22 pairs of autosomes.
If the trait is X-linked, that means the trait is on the sex chromosome X.

Alleles (continued):
Possible Genotypes:
TT
Tt
tt

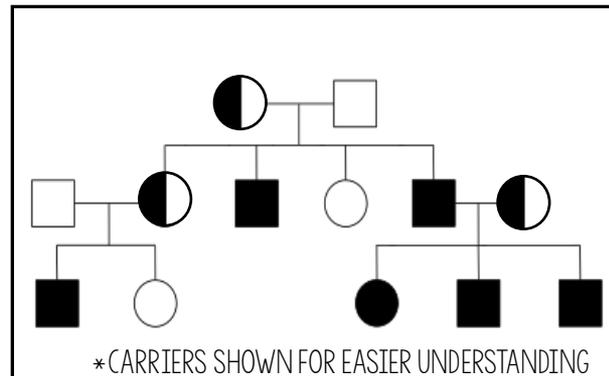
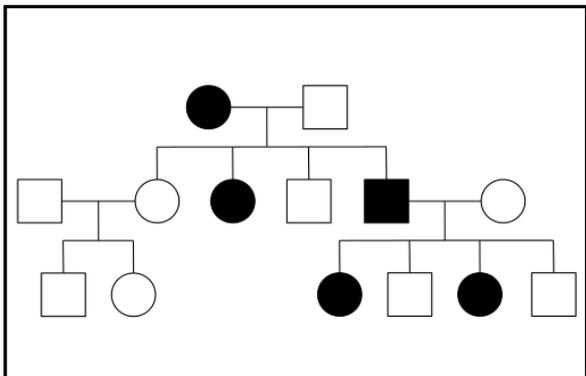
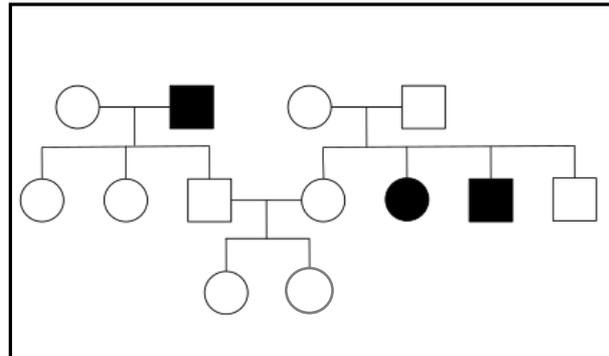
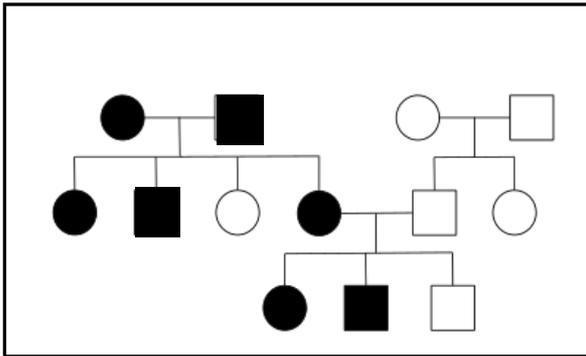
Looking at Pedigrees (continued):
If the disorder is autosomal dominant, that means that the affected individuals must have at least one T.
This also means that unaffected individuals must have the genotype tt.
Remember, to figure out what the genotypes of the parents are, look at their children.
Roman Numerals are used to label generations. They are numbered when there are three or more generations. Circle the one set of offspring individuals can be numbered, as well.

Looking at Pedigrees (continued):
Circles represent females
Squares represent males
Darkened shapes represent affected individuals.
A line joining a circle and square indicates breeding.
A perpendicular line dropping from the line indicates offspring.
This particular pair had 4 offspring: 2 boys and 2 girls.

PEDIGREE ANALYSIS CHEAT SHEET: INHERITANCE PATTERNS

AUTOSOMAL DOMINANT	AUTOSOMAL RECESSIVE	X LINKED DOMINANT	X LINKED RECESSIVE
AFFECTED PARENTS CAN HAVE <u>UN</u> AFFECTED CHILDREN. TYPICALLY DO NOT SKIP GENERATIONS.	<u>UN</u> AFFECTED PARENTS CAN HAVE AFFECTED OFFSPRING. MORE LIKELY TO SKIP GENERATIONS.	TRAIT NEVER TRANSFERS FROM FATHER TO SON. AFFECTED MALES WILL HAVE AFFECTED DAUGHTERS.	MORE COMMON IN MALES. TRAIT NEVER TRANSFERS FROM FATHER TO SON. FEMALE CARRIERS CAN PASS THE TRAIT TO THEIR SONS. AFFECTED FEMALES WILL HAVE AFFECTED SONS.

Determine which pedigrees below are autosomal dominant, autosomal recessive, x linked dominant, or x linked recessive. Each type of trait is only used once. Write the term in the box above the pedigree.



KEY

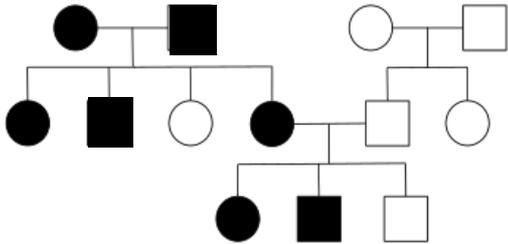
- AFFECTED MALE
- NON-AFFECTED MALE
- AFFECTED FEMALE
- NON-AFFECTED FEMALE
- CARRIER MALE
- CARRIER FEMALE

Carrier is a term often used in pedigrees to describe a heterozygous individual who carries a recessive trait, but does not have it (sometimes referring to an inheritable disease). Carriers are not always depicted on a pedigree—sometimes you have to figure them out!

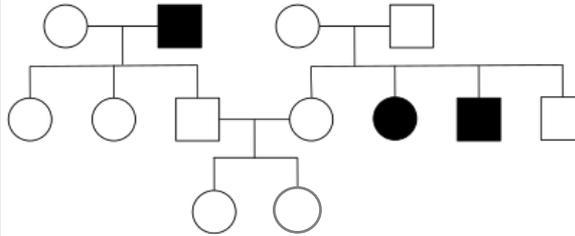
PEDIGREE ANALYSIS CHEAT SHEET: INHERITANCE PATTERNS

AUTOSOMAL DOMINANT	AUTOSOMAL RECESSIVE	X LINKED DOMINANT	X LINKED RECESSIVE
<p>AFFECTED PARENTS CAN HAVE <u>UN</u>AFFECTED CHILDREN.</p> <p>TYPICALLY DO NOT SKIP GENERATIONS.</p>	<p><u>UN</u>AFFECTED PARENTS CAN HAVE AFFECTED OFFSPRING.</p> <p>MORE LIKELY TO SKIP GENERATIONS.</p>	<p>TRAIT NEVER TRANSFERS FROM FATHER TO SON.</p> <p>AFFECTED MALES WILL HAVE AFFECTED DAUGHTERS.</p>	<p>MORE COMMON IN MALES.</p> <p>TRAIT NEVER TRANSFERS FROM FATHER TO SON.</p> <p>FEMALE CARRIERS CAN PASS THE TRAIT TO THEIR SONS.</p> <p>AFFECTED FEMALES WILL HAVE AFFECTED SONS.</p>

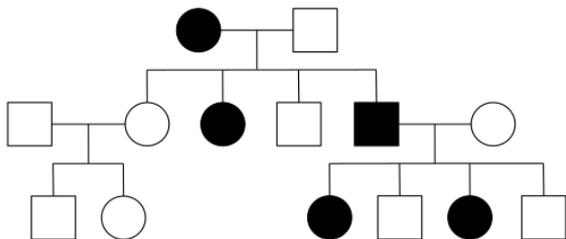
AUTOSOMAL DOMINANT



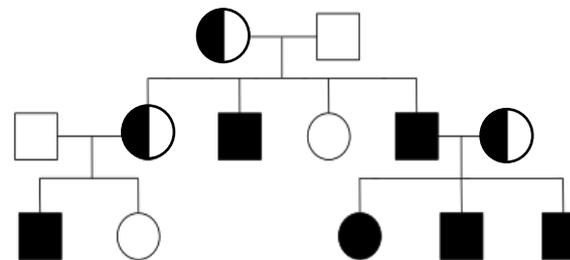
AUTOSOMAL RECESSIVE



X LINKED DOMINANT



X LINKED RECESSIVE



*CARRIERS SHOWN FOR EASIER UNDERSTANDING

KEY

-  AFFECTED MALE
-  NON-AFFECTED MALE
-  AFFECTED FEMALE
-  NON-AFFECTED FEMALE
-  CARRIER MALE
-  CARRIER FEMALE

Carrier is a term often used in pedigrees to describe a heterozygous individual who carries a recessive trait, but does not have it (sometimes referring to an inheritable disease). Carriers are not always depicted on a pedigree—sometimes you have to figure them out!