

Mendel's laws of Genetics

There are two laws that Mendel developed through his experiments. One is called the law of segregation and the other is law of independent assortment.

Law of Segregation – Each parent can only give exactly 50% of their traits to their offspring.

Law of Independent Assortment – The alleles separate independently of alleles for other traits.

New Word

Allele – One alternative of a pair or group of genes that could occupy a specific position on a chromosome. An example would be h is an allele of H and vice versa. When the alleles are identical they are homozygous. When the alleles are different they are heterozygous.

For this assignment you are going to create the traits on the offspring from the parents chromosome 4. Both laws will be followed to give an idea how the traits are passes on to the offspring.

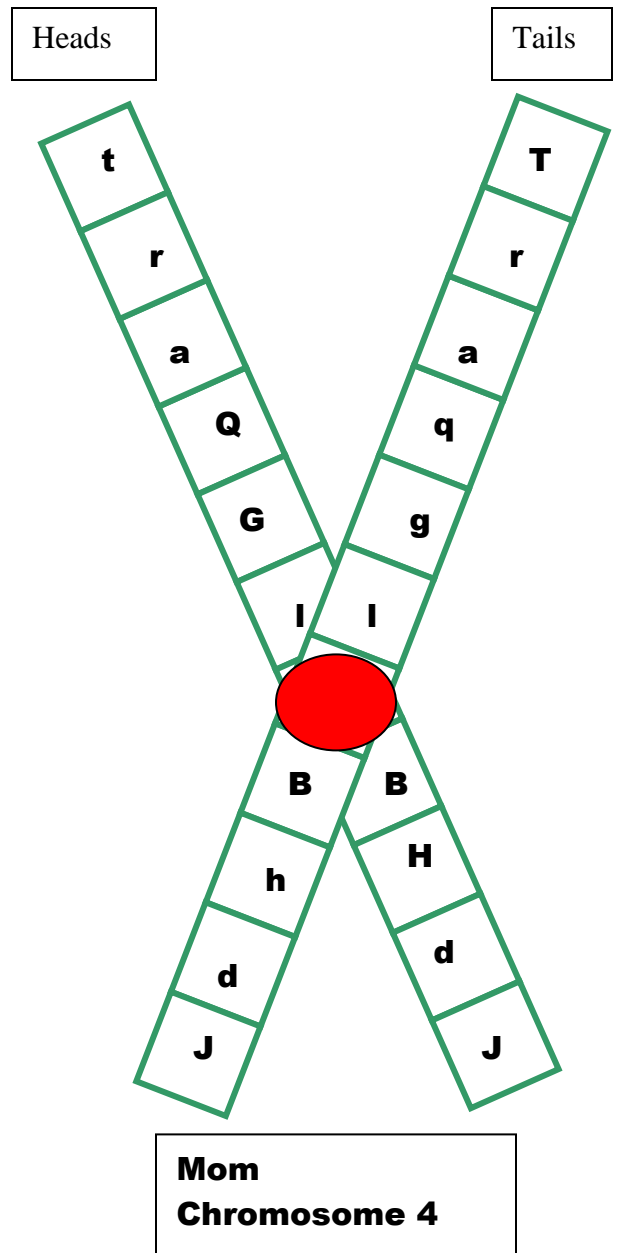
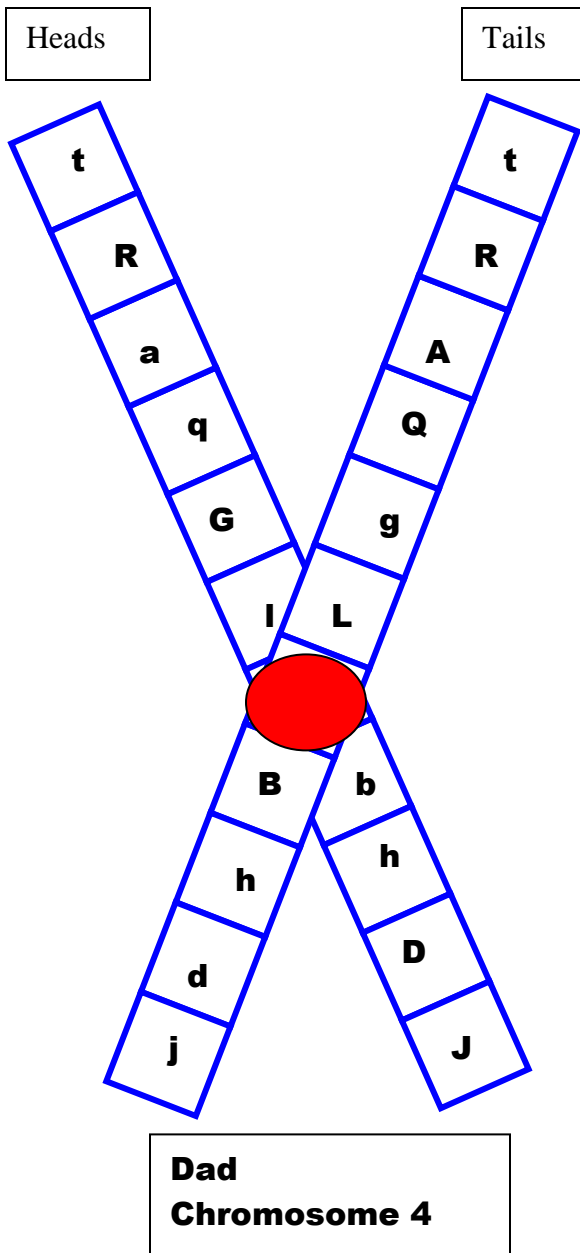
Step 1 – Take two pennies and label one penny with the capital letter D on both sides and the other penny with the capital letter M on both sides. The penny with the D will be used to get half of the trait for the offspring, on page 3. The penny with the M will be used to get the other half of the trait for the offspring.

Step 2 – Flip the pennies once for each trait and at the same time.

Ex. Flip one you get a heads for the penny with the D and a Tails for the penny with the M. The first trait is for body shape and the alleles used are capital T and lowercase t. Since you flipped a heads for the penny with the D, for dad, you would write a lowercase t in top box of the offspring's half from dad. Since you flipped a tails for the penny with the M, for mom, write a capital T in the top box of the offspring's half from mom. Keep going until all traits are filled in for the offspring.

Step 3- Fill in the tables on page 4. Write in the genotype and phenotype for mom, dad, and offspring.

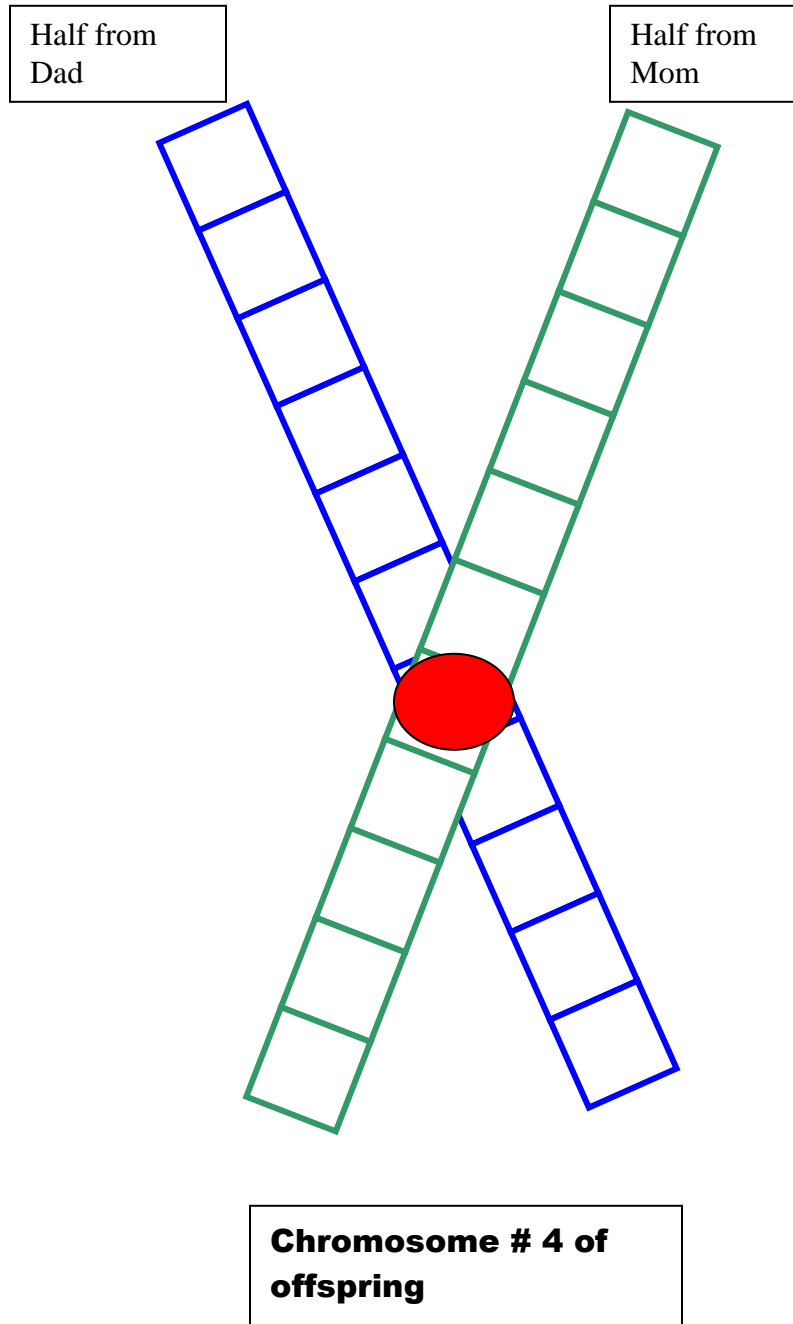
Step 4 – Draw a picture of mom, dad, and offspring using the traits from the tables.



| Traits | Dominant Gene | Recessive Gene |
|----------------------|---------------|----------------|
| Body Shape | Triangle (T) | Square (t) |
| Dots on Body | Dots(R) | No Dots (r) |
| Head Shape | Round (A) | Square (a) |
| Head Size | Normal (Q) | Huge (q) |
| Eye Shape | Triangle (G) | Oval (g) |
| Arm length | Long (L) | Short (l) |
| Arm width | Skinny (B) | Wide (b) |
| # of fingers on hand | 2 fingers (H) | 4 fingers (h) |
| Ear Shape | Pointy (D) | Round (d) |
| Nose Shape | Square (J) | Triangle (j) |

Name:

Hour:



Fill in the genotype and phenotype for mom, dad, and offspring.

Mom

| Genotype | Phenotype |
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Dad

| Genotype | Phenotype |
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Offspring

| Genotype | Phenotype |
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