**INDEPENDENT ASSORTMENT PRACTICE NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Let’s start with some review.

1. A brown mouse is homozygous dominant for the fur color gene (F). This mouse mates with a mouse who is heterozygous for brown fur color.

Genotype of Parent 1 \_\_\_\_\_\_\_\_\_\_\_\_ Genotype of Parent 2 \_\_\_\_\_\_\_\_\_\_\_\_

1. Set up the Punnett square below to show the gametes each parent can produce. NO NEED TO FILL IN THE OFFSPRING.

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1. How many alleles are in each gamete above? Explain why this number is different from the number of alleles each parent started with.

Now, the Law of Independent Assortment says that alleles for one trait will organize themselves independently of alleles for another trait during gamete formation (meiosis). This occurs because crossing over in meiosis shuffles up the genes for each chromosome in the cell before it divides. So, it is possible to create gametes (sex cells) with every possible combination of alleles when looking at multiple genes simultaneously. For example:



For each parent, record all possible gametes they can produce through meiosis. Four gametes are provided for each parent – each must be filled in but know that not every gamete will be unique (some will look the same, that’s okay!)

1. A chicken with the genotype AaTT
2. A dog with the genotype bbRR
3. A rabbit with the genotype PPNn
4. A woman with the genotype EeHh
5. A man with the genotype DdGg