






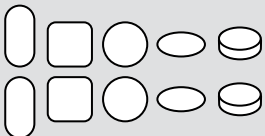
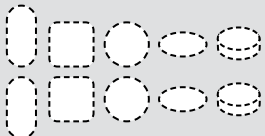
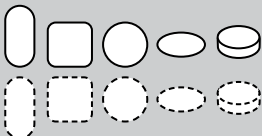
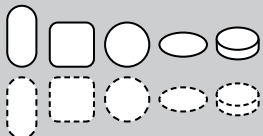
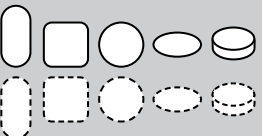
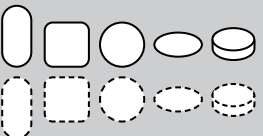
Cup-a-Genes

Genes, which influence traits, are passed down from parent to offspring. Offspring get one allele (version) of every gene from each parent. Proteins are made from both alleles, and they help to make traits. Here, you're modeling sexual reproduction by showing how alleles are passed from one generation to another.

Part 1

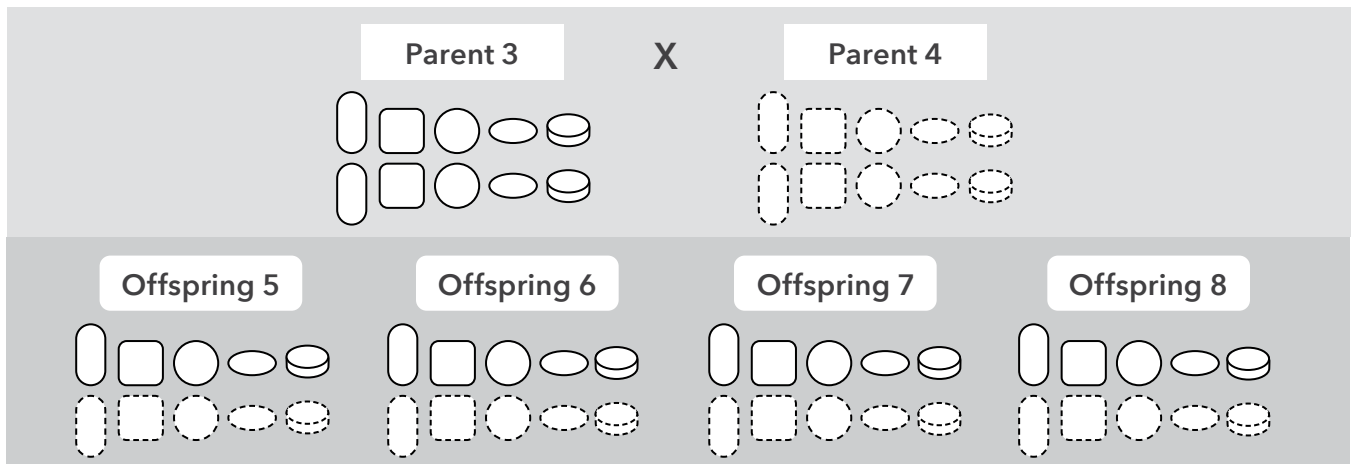
1. Fill in the key to the right with the objects you will use to represent each shape.
2. Color the shapes for Parent 1 and 2 below to show the alleles in each of your parent cups.
3. Make offspring 1.
 - a. Shake the cups and then randomly remove (by feel) one of each allele from the Parent 1 cup until you have 5 objects out of the cup. If you pull a second of the same shape, just put it back.
 - b. Color the shapes in the top row (solid shapes) of Offspring 1. Return the objects to the Parent 1 cup.
 - c. Repeat step a with Parent 2. Color in the shapes in the bottom row of Offspring 1. Return the objects to the Parent 2 cup.
4. Repeat steps a-c to make Offspring 2, 3, and 4.

KEY	
	
	
	
	
	

Parent 1		X	Parent 2	
				
Offspring 1	Offspring 2	Offspring 3	Offspring 4	
				

Part 2

Repeat the process (steps 1-4) with 2 new parent cups.



Part 3

1. Are any of the offspring identical to one of the parents?

Explain why this is unlikely.

2. We are only modeling 5 genes. Is this realistic for humans?

Explain the likelihood of offspring being identical to their parents if all human genes were modeled.

3. The gene pool contains all the gene versions in a given population. Did any of your “parents” have all the available gene versions?

Did any of your offspring?

4. Design two parents (based on the class gene pool) that would produce offspring with the most variation.

Explain your choice.

