Name: _____

Practicing Punnett Squares

This worksheet is for students who have already been introduced to Punnett squares. If you have not learned about Punnett squares or need to review what they are, go to the worksheet called "Animal Geneticist: Introduction to Punnett Squares."

An animal geneticist studies genes in animals. Genes are passed from parent to offspring and determine the traits an organism has. For example, fur color, scale patterns, and fin length are all determined by genes.



Today, you will think like an animal geneticist and use a Punnet Square to figure out what gene combinations an offspring could inherit from their parents.

Step 1: Learn about Zimoccas

Imagine that a new species of animal, called Zimmocas, was just discovered in the forest. Zimmocas are tiny organisms that live in the roots of trees. The chart below has information about the genes carried by the Zimmocas. Use the information in the chart to create your Punnett squares in the next step.

Characteristic	Dominant Gene	Recessive Gene
Body Color	Pink (B)	Teal (b)
Horn Number	Two Horns (H)	One Horn (h)
Number of Eyes	One Eye (E)	Six Eyes (e)
Teeth Shape	Pointed Teeth (T)	Square Teeth (t)
Arms	No Arms (A)	Arms (a)

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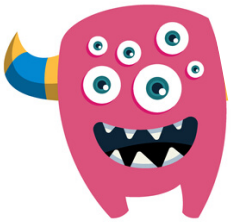
Step 2: Create a Punnet Square

Below are pictures of two parent Zimmocas. There is also information about the genotype and phenotype of each parent. A genotype is the genes of an organism. It is shown using two letters. For example EE, Ee, or ee. A phenotype is how the organism looks on the outside. For example, one eye or six eyes. Use the information below to fill in the Punnett squares on the next page and figure out what the Zimmoca offspring might look like.

Father

Characteristic	Genotype	Phenotype
Body Color	bb	Teal Body
Horn Number	Hh	Two Horns
Number of Eyes	Ee	One Eye
Teeth Shape	tt	Square Teeth
Arms	AA	Arms

Mother



Characteristic	Genotype	Phenotype
Body Color	Bb	Pink Body
Horn Number	hh	One Horn
Number of Eyes	ee	Six Eyes
Teeth Shape	TT	Pointed Teeth
Arms	aa	No Arms

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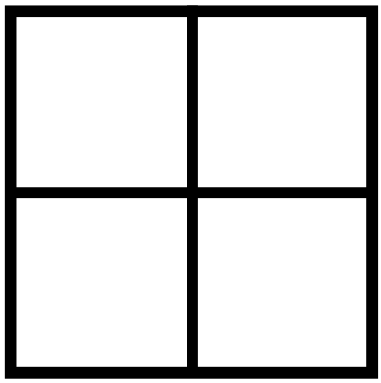
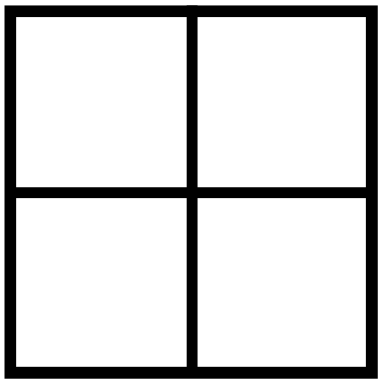
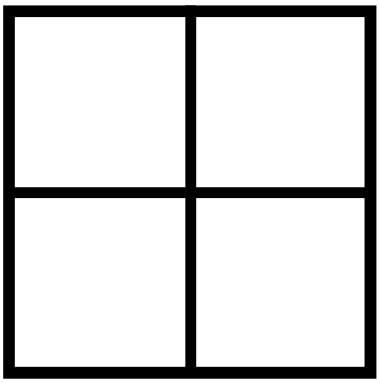
Body Color



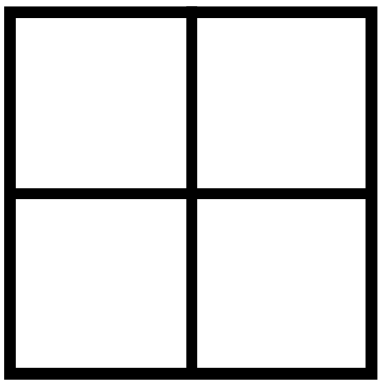
Horn Number



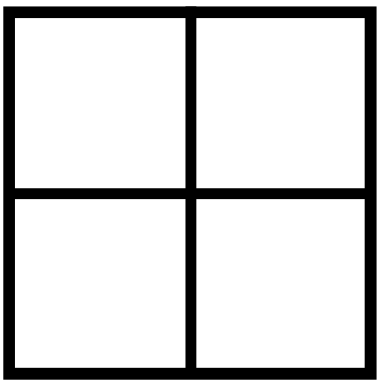
Eye Number



Teeth Shape



Arms



Use the Punnett squares above to fill in the following information about the possible Zimmoca offspring.

- There is a _____ out of _____ chance the Zimmoca parents will have an offspring with a pink body.
- There is a _____ out of _____ chance the Zimmoca parents will have an offspring with one horn.
- There is a _____ out of _____ chance the Zimmoca parents will have an offspring with one eye.
- There is a _____ out of _____ chance the Zimmoca parents will have an offspring with square teeth.
- There is a _____ out of _____ chance the Zimmoca parents will have an offspring with arms.

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Step 3: Choose Zimmoca Offspring Genes

When parent genes combine to create an offspring, random genes are passed down. Using the Punnett squares from step 2, choose which gene combination your Zimmoca offspring receives from its parents. Note: You may choose any combination you see within the Punnett square. You may not choose a gene combination that does not appear in your Punnett square. List the genes your baby Zimmoca has below.

Characteristic	Genotype	Phenotype
Body Color		
Horn Number		
Number of Eyes		
Teeth Shape		
Arms		

Name: _____

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Step 4: Draw your Zimmoca Offspring

Using the genes you have selected above, draw your Zimmoca offspring in the box below. Be sure to include all 5 traits you have chosen.