



# Zork Genetics



| Characteristic | Dominant Gene | Recessive Gene |
|----------------|---------------|----------------|
| Height         | Tall (T)      | Short (t)      |
| Eye Number     | One (E)       | Three (e)      |
| Lip Color      | Purple (L)    | Green (l)      |
| Fang Number    | One (F)       | Two (f)        |

USE YOUR KNOWLEDGE OF GENETICS TO COMPLETE THIS WORKSHEET.

1. Use the information for a Zork's traits to write the **phenotype** (physical appearance) for each item.

- a) TT \_\_\_\_\_ c) ee \_\_\_\_\_  
b) Ll \_\_\_\_\_ d) Ee \_\_\_\_\_

2. Use the information in the chart to write the **genotype(s)** for each trait below.

- a) One eye \_\_\_\_\_ c) Two Fangs \_\_\_\_\_  
b) Short \_\_\_\_\_ d) Purple Lips \_\_\_\_\_

3. Determine the **genotypes** for each using the information in the chart.

- a) Heterozygous purple lips \_\_\_\_\_ c) Homozygous one eye \_\_\_\_\_  
b) Hybrid one fang \_\_\_\_\_ d) Purebred tall \_\_\_\_\_

4. A tall Zork named George met and fell in love with a tall Zork named Marge. Use your knowledge of genetics to answer the questions below.

- a. If Marge's father is a heterozygous tall Zork and her mother is a short Zork, what is Marge's genotype? Complete the Punnett square to show the possible genotypes that would result to help you determine Marge's genotype.

What is Marge's genotype? \_\_\_\_\_

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|--|--|
|  |  |
|  |  |

- b. George is heterozygous for this height. What is his genotype?  
\_\_\_\_\_

- c. Complete the Punnett square to show the possibilities that would result if George and Marge had offspring.

|  |  |
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|  |  |
|  |  |

- d. List the possible **genotypes** and **phenotypes** for the kids.

e. What is the probability of tall Zork kids? \_\_\_\_\_%

f. What is the probability of short Zork kids? \_\_\_\_\_%

5. George's aunt and uncle, Zit and Zilla have the most beautiful set of purple lips on the planet. Zilla is believed to be heterozygous for her lip color. Zit's family brags that their blood line is pure. Complete the Punnett square to show the possibilities that would result if Zit and Zilla have offspring.

a. Give the genotype of each zork. Zit \_\_\_\_\_ Zilla \_\_\_\_\_

b. Complete the Punnett square to show the possibilities that would result if they had children.

c. List the possible genotypes and phenotypes for the Zork babies.

|  |  |
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|  |  |

d. What is the probability that the kids will have purple lips? \_\_\_\_\_%

e. What is the probability that the kids will have green lips? \_\_\_\_\_%

6. Commander Shlob is famous for his three eyes. He recently found a good looking female Zork who also has three eyes. In order to a Zork to be a commander it must have three eyes. Would it be possible for them to have a Zork baby with only one eye? Why or why not? Create a Punnett square to help you answer this question.

7. Zorks with two fangs make more money than Zorks with one fang. Commander Shlob (from question 6) is heterozygous for one fang, but wants to have a Zork baby with two fangs. Is it possible for him to have a Zork baby with two fangs? What type of female Zork would he need to marry in order to give him the best chance at having an offspring with two fangs? Create a Punnett square to help you answer this question.