**Outcome Practice: Multiple Alleles**

**Outcome 5**

**Name: Biology 12**

**Multiple Allele Questions**

1. Using the following chart which indicates the order of dominance for eye colour in fruit flies (that contain multiple alleles) answer the questions below.
2. What are the phenotypes of the offspring when a honey eyed (E3E4) fruit fly mates with a white eyed fruit fly?
3. What would the phenotypes be for the offspring if a homozygous apricot eyed fly were mated with a red (wild type) fruit fly with the genotype E1E4)?
4. Coat colour in rabbits is governed by four different alleles. Each allele is responsible for producing a different coat colour: dark grey, Chinchilla, Himalayan and white. Each rabbit has only two alleles. Use the order of dominance table below to assist you in answering the following questions:
5. List all the possible genotypes for each coat colour

dark grey rabbit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chinchilla rabbit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Himalayan rabbit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

white rabbit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Predict the phenotype of a rabbit with the following genotypes.

chcch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Cch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Indicate the phenotypes of the F1 generation from the mating of a heterozygous Himalayan-coat rabbit with a white-coat rabbit.
2. Would it be possible to obtain white rabbits if one parent is white and the other is Chinchilla? Explain.
3. Would it be possible to obtain Chinchilla rabbits if one parent is Himalayan and the other is white? Explain.
4. A Chinchilla rabbit is mated with a Himalayan rabbit. Some of the offspring are white, what are the parents’ genotypes?

**Multiple alleles & Co-dominance Questions:**

1. In smileys, the shape of the eye is controlled by multiple alleles with four possible phenotypes. It is known that the star and dot eyes are co-dominant and the square eyes are a recessive trait. Assign genotypes to each of the smileys pictured (Hint: use superscripts).



1. Show all the possible genotypes for each smiley shown, use F for the allele.
2. If a homozygous stary-eyed smiley is crossed with a homozygous dot-eyed smiley what will the phenotypic ratio be for their offspring?
3. If a heterozygous stary-eyed smiley is crossed with a heterozygous dot-eyed smiley what will the phenotypic ratio be for their offspring?
4. If a starry-dot eyed smiley is crossed with a square eyed smiley what will the phenotypic ratio be for their offspring?
5. 
6.  6.