**Worksheet 4.**

**Activity 1**

In humans the allelic gene for Brown eye color (B) is dominant over the gene for Blue color (b). In a possible cross the genotype of the male individual is Bb and the female individual is bb.

A. Complete the Punnett table for the eye color of their offspring.

|  |  |  |
| --- | --- | --- |
|  | Β | b |
| b |  |  |
| b |  |  |

B. What is the probability that the next offspring will have

1. brown eyes?

2. blue eyes?

C. A student observing the Punnett chart thought that if the family has 4 children then two of the children should have Blue eyes and the other two should have Brown eyes. How do you comment on the student's thinking?

**Activity 2**

If the genotype of the male is bb and the genotype of the female is BB,

A. what is the probability that one of their children will have blue eyes?

B. Consider whether the following sentence is true: "The possibility that 'all the children in the family are brown' is certain".

**Activity 3**

The female and male individuals are heterozygous for brown eye color and their child's genotype contains the recessive allele. A student claims that the probability that the child has Blue eyes is equal to the probability that the child has Brown eyes. Which is your opinion;

**Activity 4**

The Punnett chart below refers to the Worksheet 3 activity.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **DE** | **De** | **DE** | **De** |
| **dE** |  |  |  |  |
| **dE** |  |  |  |  |
| **de** |  |  |  |  |
| **de** |  |  |  |  |

What is the probability that an individual's phenotype to have

1. Laugh dimples, attached ear lobe

2. Laugh dimples, free ear lobe

3. No dimples, attached ear lobe

4. No dimples, free ear lobe