1. In a flowering plant, white flowers are dominant over red, and short plants are dominant over tall. When two plants that are heterozygous for both traits are crossed the resulting phenotypes were observed:

|  |  |
| --- | --- |
| White, short: | 206 |
| Red, short: | 83 |
| White, tall: | 65 |
| Red, tall: | 30 |

1. What do the results of this chi-square analysis tell you about the results obtained with these crosses?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phenotype** | **Observed (o)** | **Expected (e)** | **(o-e)** | **(o-e)2/e** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Total=** |  |  | **Sum (X2)=** |

1. In corn, purple corn kernels are dominant over yellow, and smooth kernels are dominant over shrunken. The following was observed in an ear of corn:

|  |  |
| --- | --- |
| Purple, smooth: | 216 |
| Purple, shrunken: | 79 |
| Yellow, smooth: | 65 |
| Yellow, shrunken: | 21 |

1. What are the likely genotypes of the parental corn plants?
2. What do the results of this chi-square analysis tell you about the results obtained with these crosses?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phenotype** | **Observed (o)** | **Expected (e)** | **(o-e)** | **(o-e)2/e** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Total=** |  |  | **Sum (X2)=** |

1. Colorblindness is a sex-linked trait in fruit flies. A heterozygous female is crossed with a male who is colorblind. The phenotypes of their offspring are below:

|  |  |
| --- | --- |
| Normal female: | 132 |
| Color blind female: | 124 |
| Normal male: | 126 |
| Color blind male: | 136 |

1. What do the results of this chi-square analysis tell you about the results obtained with these crosses?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phenotype** | **Observed (o)** | **Expected (e)** | **(o-e)** | **(o-e)2/e** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Total=** |  |  | **Sum (X2)=** |

1. In cats, fur color is determined by codominant, sex-linked alleles, producing black, orange, or calico phenotypes. A calico female is bred with a black male over the course of several years and the phenotypes of their offspring noted:

|  |  |
| --- | --- |
| Black female: | 78 |
| Calico female: | 65 |
| Black male: | 81 |
| Orange male: | 45 |

1. What do the results of this chi-square analysis tell you about the results obtained with these crosses?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Phenotype** | **Observed (o)** | **Expected (e)** | **(o-e)** | **(o-e)2/e** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | **Total=** |  |  | **Sum (X2)=** |