Alysa and Dani

Table One:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DNA Size Markers | Fragment Length in Base Pairs | Distance Migrated (mm)  **A** | Distance to Reference Point (mm)  **B** | Rf  **A ÷ B** |
| Fragment 1 | 1353 | 28 | 109 | .26 |
| Fragment 2 | 1078 | 34 | 109 | .31 |
| Fragment 3 | 872 | 38 | 109 | .35 |
| Fragment 4 | 603 | 49 | 109 | .45 |
| Fragment 5 | 310 | 70 | 109 | .64 |
| Fragment 6 | 281 | 73 | 109 | .67 |
| Fragment 7 | 234 | 78 | 109 | .72 |
| Fragment 8 | 194 | 84 | 109 | .77 |

1. Obtain a Student Response Sheet from your teacher.
2. Draw a standard curve plotting Rf versus fragment length (in base pairs) on your Student Response Sheet.
3. Calculate the Rf value for each DNA fragment for each family member and fill-in the table below. Round values to the nearest one hundredth.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DNA Sample: | Fragment: | Distance Migrated (mm)  **A** | Distance to Reference Point (mm)  **B** | Rf  **A ÷ B** |
| Diana | Fragment 1 | 47 | 109 | .43 |
| Fragment 2 | 56 | 109 | .51 |
| Jennifer | Fragment 1 | 51 | 109 | .47 |
| Fragment 2 | 63 | 109 | .58 |
| Laura | Fragment 1 | 47 | 109 | .43 |
| Fragment 2 | 63 | 109 | .58 |
| Judy | Fragment 1 | 37 | 109 | .34 |
| Fragment 2 | 63 | 109 | .58 |

1. Use your standard curve to determine the base pair size of the fragments of all family members’ DNA samples and add this information to Table Two.

Table Two:

|  |  |  |  |
| --- | --- | --- | --- |
| DNA Sample: | Fragment: | Fragment Length (in base pairs) | Allele Present: |
| Diana | Fragment 1 | 700 | 6 |
| Fragment 2 | 500 | 4 |
| Jennifer | Fragment 1 | 600 | 5 |
| Fragment 2 | 400 | 3 |
| Laura | Fragment 1 | 600 | 5 |
| Fragment 2 | 400 | 3 |
| Judy | Fragment 1 | 900 | 8 |
| Fragment 2 | 400 | 3 |

1. Use the data table below to determine which alleles were present in each family member’s DNA samples. Fill in the *Allele Present* column in Table Two.

|  |  |
| --- | --- |
| **Fragment Length in Base Pairs:** | **Allele:** |
| 200 | Allele 1 |
| 300 | Allele 2 |
| 400 | Allele 3 |
| 500 | Allele 4 |
| 600 | Allele 5 |
| 700 | Allele 6 |
| 800 | Allele 7 |
| 900 | Allele 8 |
| 1000 | Allele 9 |