Define Zn = {0,1,2,…,n-1}

Define a +n b = (a+b) mod n = (a mod n) + (b mod n)

Define a xn b = (axb) mod n = (a mod n ) x (b mod n)

Recall a (mod n) = b if b is the remainder upon the division of a by n

(e.g. 5 (mod 3) = 2; 14 (mod 3) = 2, think of “clock arithmetic”)

Fill in each of the following Cayley Tables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **(Z4, +4)** | **0** | **1** | **2** | **3** |
| **0** |  |  |  |  |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **(Z4, x4)** | **0** | **1** | **2** | **3** |
| **0** |  |  |  |  |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **(Z5, +5)** | **0** | **1** | **2** | **3** | **4** |
| **0** |  |  |  |  |  |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **(Z5, x5)** | **0** | **1** | **2** | **3** | **4** |
| **0** |  |  |  |  |  |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **(Z6, +6)** | **0** | **1** | **2** | **3** | **4** | **5** |
| **0** |  |  |  |  |  |  |
| **1** |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(Z6, x6)** | **0** | **1** | **2** | **3** | **4** | **5** |
| **0** |  |  |  |  |  |  |
| **1** |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **(Z7, +7)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** |
| **0** |  |  |  |  |  |  |  |
| **1** |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **(Z7, x7)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** |
| **0** |  |  |  |  |  |  |  |
| **1** |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |