

Investigate (n-1)-th and n-th powers of all integers mod n

```
In[1]:= n = 571; For [k = 0, k ≤ 20, Print[k, " ", PowerMod[k, n, n], " ", PowerMod[k, n - 1, n]]; k++]
```

```
0 0 0
```

```
1 1 1
```

```
2 2 1
```

```
3 3 1
```

```
4 4 1
```

```
5 5 1
```

```
6 6 1
```

```
7 7 1
```

```
8 8 1
```

```
9 9 1
```

```
10 10 1
```

```
11 11 1
```

```
12 12 1
```

```
13 13 1
```

```
14 14 1
```

```
15 15 1
```

```
16 16 1
```

```
17 17 1
```

```
18 18 1
```

```
19 19 1
```

```
20 20 1
```

```
FactorInteger[571]
```

```
Out[2]= {{571, 1}}
```

```
In[1]:= n = 581; For [k = 0, k ≤ 20, Print[k, " ", PowerMod[k, n, n], " ", PowerMod[k, n - 1, n]]; k++]
```

```
0 0 0
1 1 1
2 543 562
3 278 480
4 282 361
5 437 436
6 475 176
7 266 287
8 323 113
9 11 324
10 243 431
11 16 424
12 542 142
13 517 442
14 350 357
15 57 120
16 508 177
17 285 256
18 163 235
19 500 485
20 62 526
```

```
In[4]:= FactorInteger[581]
```

```
Out[4]= {{7, 1}, {83, 1}}
```

```
In[2]:= n = 561; For[k = 0, k ≤ 20, Print[k, " ", PowerMod[k, n, n], " ", PowerMod[k, n - 1, n]; k++]
```

```
0 0 0
1 1 1
2 2 1
3 3 375
4 4 1
5 5 1
6 6 375
7 7 1
8 8 1
9 9 375
10 10 1
11 11 154
12 12 375
13 13 1
14 14 1
15 15 375
16 16 1
17 17 34
18 18 375
19 19 1
20 20 1
```

```
In[3]:= FactorInteger[561]
```

```
Out[3]= {{3, 1}, {11, 1}, {17, 1}}
```