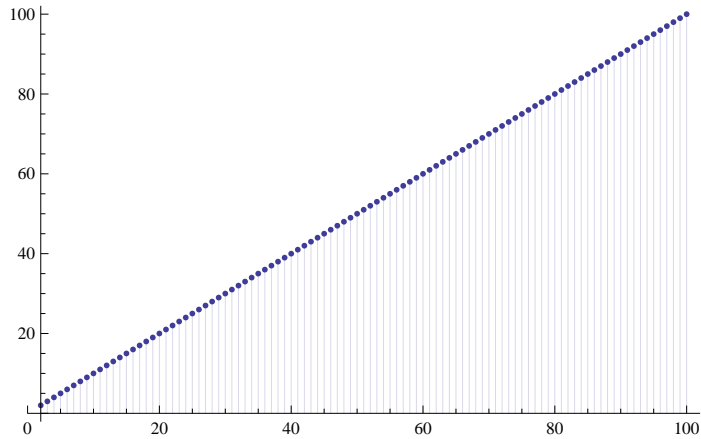


```
dd[n_, z_, k_] := 1 + (z - k + 1) / k Sum[dd[Floor[n / j], z, k + 1], {j, 2, n}]
```

```
DiscretePlot[dd[n, 1, 1], {n, 2, 100}]
```



```
num[c_] := Numerator[c]; den[c_] := Denominator[c]
```

```
alpha[n_, c_] := alpha[n, c] = den[c] (Floor[n / den[c]] - Floor[(n - 1) / den[c]]) -  
  num[c] (Floor[n / num[c]] - Floor[(n - 1) / num[c]])
```

```
ld[n_, z_, k_] := (z - k + 1) / k Sum[Log[j] + ld[Floor[n / j], z, k + 1], {j, 2, n}]
```

```
ldx[n_, z_, k_, c_] := den[c] ^ -1 (z - k + 1) / k
```

```
Sum[If[alpha[j, c] == 0, 0, alpha[j, c] (Log[j / den[c]] + ldx[den[c] n / j, z, k + 1, c])],  
  {j, 1 + den[c], den[c] n}]
```

```
ldxml[n_, z_, k_, c_] := den[c] ^ -1 (z - k + 1) / k Sum[
```

```
  If[alpha[j, c] == 0, 0, alpha[j, c] (Log[j / den[c]] + ldxml[den[c] n / j, z, k + 1, c])],  
  {j, 1 + den[c], den[c] n - 1}]
```

```
N[ld[100, 1, 1]]
```

```
363.739
```

```
N[ldx[100, -1, 1, 3 / 2]]
```

```
9.95352
```

```
N[L1[100, -1, 3 / 2]]
```

```
9.95352
```

```
FullSimplify[ldx[20, 1, 1, 3 / 2] - ldxml[20, 1, 1, 3 / 2]]
```

```
Log[20]
```