Project Euler in Kona(K3)

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Problem 1

```
(+/15*!67)+/{:[~(0 = x!3)=(0 = x!5);x;0]}''!1000
```

Problem 2

```
n:0 1;do[32;n:{(x,+/-2#x)}n];+/n@&0=n!2
```

Problem 3

```
n:600851475143;list:1_!_ceil_sqrt n
f:{{&/x!/:2_!x}x}
list:list@&0=n!/:list;list:list@&1=f'list
|/list
```

Problem 4

```
f:{x*!1000};pal:{{. |$x}x}
a:,/f''!1000;a:a@&0=a-pal'a;|/a
```

Problem 5

```
{x*y%{:[_ y;_f[y]x!y;x]}[x]y}/1+!20
```

Problem 6

```
({x*x}'+/!_101)-(+/{x*x}'!_101)
```

Problem 7

```
p:{:[x<4;,2;r,1_&~|/x#'~!:'r: _f[__ceil _sqrt x]]}
b:2;while[1e4>#a:p b*:2];a[10000]
```

Problem 9

```
\p 0
a:1_?,/{[x;y]?(x,y,_sqrt((x^2)+(y^2)))*(1=4:.,/$_sqrt((x^2)+(y^2)))}'/:[1_!500;1_!500]
*/(1_?a*1000={{+/a@x}x}''!#a)@0
```

Problem 10

```
p:{2_&{:[x@y;x&@[1,-1_ z#(1_ y#1),0;y;:;1];x]}/[x#1;2_! __ceil _sqrt x;x]};+/p@_2e6
```

Problem 12

```
*{500>2*#&~(*x)!/:1+!__sqrt*x}{(+/x),1+x 1}/0 1
```

Problem 14

```
n:{a::x;while[x>1;a,:x:{:[x!2;1+3*x;_ x%2]}x];#a}''!1e6;n?(|/n)
```

Problem 15

```
*|20+\/21#1
```

Problem 16

```
+/1000{x*:2;(*&x)_ x:((x>9),0)+0,x!/:10;x}/1
```

Problem 17

```
a:$`one`two`three`four`five`six`seven`eight`nine
b:$`ten`eleven`twelve,($`thir`four,v:`fif`six`seven`eigh`nine),\:"teen"
c:($`twen`thir`for,v),\:"ty"
g:a,b,c,c,/c,/:\:a
h:a,\:"hundred"
i:g,h,h,/h,/:\:"and",/:g
z:#,/$i,`onethousand;z
```

Problem 21

```
d:{{+/(!1+_ceil x%2)*(0=x!/:!1+_ceil x%2)}x};n:!10000;a:d'n
b:d'a;j:n*(b=n);j:j@&1<j;j:j@&0<_sqr j-d'j;+/j
```

Problem 29

```
{#(?,/x^/:x)}2_!101
```

Problem 30

```
f:{. 1_(,/" ",'$x)};h:{{+/(f x)^5}x}
n:!6*(9^5);a:h'n
a:a@&0=n-a;-1+/a
```

Problem 34

```
fac:{{*/1+!x}x};f:{+/{fac'(. 1_(,/" ",'$x))}x};
a:1_!1e5;a:a@&0=a-f'a;-3+/a
```

Problem 35 (Particularly slow)

```
i:{1_ ?{x@<x}({&/{x!/:2_!x}x}'2_!x)*2_!x}1e6;
j:({[x;y] . x!$y}'[!#$x;x])}'i;
h:+/'{~(j@x)_lin i}'!#j;h:h@&0=h;#h
```

Problem 36

```
f:{{*/(,/$2_vs x)=(|,/$2_vs x)}x};g:{{.$x=.|$x}x};n:!1e6;+/(n*((f'n)*(g'n)))
```

```
//Problem 37 (to refactor due to line length)
p:{:[x<4;,2;r,1_&{@[x#1;y*!:'-_-x%y;:;0]}[x]r:_f@-_-_ceil(1+(x%2))]}@_1e6;g:5_?p*{(#$p@x)=+/($p@x)_lin"123579"}'
    !#p
f:{a::(#$x)#x;(2*(#a))=((+/({(x=2)+(x>1)*(&/{x!/:2_!1+_ceil_sqrt x}x)}'{.
    x}'{|(|$a@x)[!1+x]}'!#$x))+(+/({(x=2)+(x>1)*(&/{x!/:2_!1+_ceil_sqrt x}x)}'{. x}'{($a@x)[!1+x]}'!#$x)))}
(+/g*(f' g))
```

Problem 40

```
*/. 1_(,/" ",'((,/$!2e5)@_10^!7))
```

Problem 41

```
prime:{{&/x!/:2_!(_ceil _sqrt x)}x};p:{:[1<x;,/(>:'(x,x)#1,x#0)[;0,'1+_f x-1];,!x]};
perm:{x@p@#x};a:{. x}'perm"7654321";|/a*(prime'a)
```

Problem 43

```
pr:2 3 5 7 11 13 17;p:{:[1<x;,/(>:'(x,x)#1,x#0)[;0,'1+_f x-1];,!x]};
perm:{x@p@#x};a:{. x}'perm"9876543210";b:{+/{[x]({[y]. 3#y!1_
        $x}'!7)!'pr}x}'a;+/a*(b=0)
```

Problem 44

```
\p 0
t:{(x*((3*x)-1))*%2};a:t'1_!25e2;
*1_?,/{{((a+x)_lin a)*((a-x)_lin a)*(_abs(a-x))}'x}a
```

Problem 47

```
p:{1_ ?{x@<x}({&/{x!/:2_!x}x}'2_!x)*2_!x}1000
f:{+/0=x!'p};f 0;ss:{z[&y[z+\:!#x]~\:x]};
*ss["4444";,/$f'!15e4;&((1-#"4444")_,/$f'!15e4)=*"4444"]-2
```

Problem 49

```
p:{{&/x!/:2_!x}x}
perm:{?({. x}'x@{:[1<x;,/(>:'(x,x)#1,x#0)[;0,'1+_f x-1];,!x]}@#x)*(p'{.
    x}'x@{:[1<x;,/(>:'(x,x)#1,x#0)[;0,'1+_f x-1];,!x]}@#x)};
b:{x,(x+3330),x+6660}'100_!3340;a:perm'$100_!3340
c:{4=#?(((a@x)_lin(b@x))*(a@x))}'!3240;.,/
    $b@(,/2_?c*!3240)
```

Problem 50

```
{(+/3_?(3_ !x)*(3_ p'!x))}3940
```

Problem 52

```
*1_?(!2e5)*{a::{{x@<x}'${x*'1+!6}x}x;6=+/{(a@x)~(a@0)}'!6}'!2e5
```

Problem 55

```
50+/0={a::x;i::0;while[(0=(x=.|$x))*(i<50);a,:x:{_abs(x+.|$x)}x;i+:1];-1+#a}'!1e4
```

```
//Problem 63
1+/,/{[x]{[x;y]y=(#$(x^y))}'[x;!20]}'!20
```

Problem 85

```
r:{{{[x;y] x*y*(x+1)*(y+1)*%4}\:[x;x]}[1+!x]}
a:r 1e3;b:,/ a;l:b@&b>199e4;l:l@&l<201e4;l:_abs l-2e6;
i:(b?(2e6-(&/l)))&(b?(2e6+(&/l)));(1+i!(#a))*(1+_floor i%(#a))
```

Problem 99

```
t:0:"base_exp.txt";n:+{{. x}'","\(t@x)}'!#t;a:f[n@0;n@1];1+a?(|/a)
```

Problem 119

```
\p 0
i:(?,/ (!70)^/:(!10));f:{{|/x=(+/. 1_(,/" ",'$x))^!10}x}
i:i*f'i;i:i@&0<i;i:9_{x@<x}i;i@29
```