```
> ### light-years.mw
```

Copied and pasted from my 1999 Maple HOW_MANY.html document which is at this page of mine

https://johnbcosgrave.ie/download/Fermat_material/HOW_MANY.html:

```
> LIGHT_YEARS := proc(n, N)
  print(``); lprint(`The approximate length of the closest fit square in which
  to write the digits of the`, n,`-th. Fermat number at`, N, `digits
  per INCH is 10 to the POWER of`, log[10](evalf(sqrt((2.0^n)*log[10](2.0)))/(N*
  12*3*1760)) - 12.75747668, `LIGHT YEARS`); end:
```

```
>  LIGHT_YEARS(382447, 4); ### F[382447) was the composite Fermat found by J.B.
  Cosgrave-Gallot in 1999

        `The approximate length of the closest fit square in which
  to write the digits of the`, 382447, `-th. Fermat number at`, 4, `digits
        per INCH is 10 to the POWER of`, 57545.58733, `LIGHT YEARS`
```

The current (August 2026) largest known composite Fermat number is:

$$F_{18233954} = 2^{2^{18233954}} + 1$$

It was shown - by Ryan Propper, Reynolds, Penné & Fougeron - to have a factor $7 \cdot 2^{18233956} + 1$. This (vainly) attempts to convey how large it is:

```
>  LIGHT_YEARS(18233954, 4);

        `The approximate length of the closest fit square in which
  to write the digits of the`, 18233954, `-th. Fermat number at`, 4, `digits
        per INCH is 10 to the POWER of`, 2744465.125, `LIGHT YEARS`
```