Solution

Rewrite the following in scientific notation without metric prefixes.

a) 89 Tm

T stands for tera, which is 10^{12}. Therefore,

$$89 \ Tm = 89 \times 10^{12} \ m = 8.9 \times 10^{13} \ m$$

b) 89 pm

p stands for pico, which is 10^{-12}. Therefore,

$$89 \ pm = 89 \times 10^{-12} \ m = 8.9 \times 10^{-11} \ m$$

c) 711 mm

m stands for milli, which is 10^{-3}. Therefore,

$$711 \ mm = 711 \times 10^{-3} \ m = 7.11 \times 10^{-1} \ m$$

d) 0.45 μm

μ stands for micro, which is 10^{-6}. Therefore,

$$0.45 \ \mu m = 0.45 \times 10^{-6} \ m = 4.5 \times 10^{-7} \ m$$