

Practice Problems: Measurement

- Express 549000000 in scientific notation.
[A] 5.49×10^{-8} [B] 5.49×10^8 [C] 549×10^8 [D] 549×10^6 [E] 54.9×10^{-7}
- Express 506100 in scientific notation.
[A] 5.06100×10^5 [B] 5.1×10^5 [C] 5×10^5 [D] 5.061×10^5 [E] 51×10^5
- Write 4,251 in standard scientific notation.
[A] 4.251 [B] 4.251×1000 [C] 42.52×10^2 [D] 4,251 [E] 4.251×10^3
- The number 0.000402 expressed in exponential notation is
[A] 4.02×10^3 [B] 4.02×10^{-3} [C] 4.02×10^4
[D] 4.02×10^{-4} [E] 4.02×10^{-2}
- One kilogram contains this many grams.
[A] 1000 [B] 10 [C] 1/100 [D] 1/1000 [E] 100
- How many milliliters are in 0.020 L?
[A] 200 mL [B] 0.20 mL [C] 2.0 mL [D] 20. mL [E] 5.0 mL
- The measurement 4.3×10^3 g also could be written as
[A] 4.3 dg [B] 4.3 kg [C] 4.3 pg [D] 4.3 mg [E] 4.3 g
- How many millimeters are in 251 centimeters?
[A] 2.51×10^3 mm [B] 2.51 mm [C] 2.51×10^2 mm
[D] 2.51×10^{-2} mm [E] 2.51×10^1 mm
- Convert: 1 cm = _____ mm.
- Convert: 4.96 kg = _____ mg.
- Convert: 683 mm = _____ cm.
- Convert: 25 mL = _____ L.

13. One millisecond is equal to how many seconds?
[A] 10^{-3} s [B] 10^6 s [C] 10^{-6} s [D] 10^3 s [E] 1 s
14. The fundamental unit of mass in the metric system is the
[A] milliliter [B] kilometer [C] centimeter [D] meter [E] gram
15. A cubic centimeter (cm^3) is equivalent to what other metric volume unit?
[A] millimeter [B] liter [C] centimeter [D] deciliter [E] milliliter
16. The number of millimeters in 0.101 meter is
[A] 9.90×10^3 mm [B] 1.01×10^{-3} mm [C] 1.01×10^{-4} mm
[D] 1.01×10^4 mm [E] 1.01×10^2 mm
17. The number of cubic centimeters (cm^3) in 43.0 mL is
[A] 0.0430 cm^3 [B] 43.0 cm^3 [C] 4.30 cm^3 [D] none of these
18. A student finds that the weight of an empty beaker is 12.024 g. She places a solid in the beaker to give a combined mass of 12.108 g. To how many significant figures is the mass of the solid known?
[A] 4 [B] 2 [C] 3 [D] 5 [E] 1
19. How many significant figures are in the number 4.00700×10^{13} ?
[A] none of these [B] 2 [C] 4 [D] 6 [E] 5
20. Convert 258 L to milliliters.
[A] 2.58×10^3 mL [B] 2.58×10^5 mL [C] 0.258 mL
[D] 258 mL [E] 2.58 mL
21. Convert 561097 mm to kilometers.
[A] 561.097 km [B] 5.61097×10^{11} km [C] 5.61097 km
[D] 0.561097 km [E] 5610.97 km

① $549,000,000 = 5.49 \times 10^8$ (B)

② $506,100 = 5.061 \times 10^5$ (D)

③ $4251 = 4.251 \times 10^3$ (E)

④ $0.000402 = 4.02 \times 10^{-4}$ (D)

⑤ 1000 (A)

⑥ $0.020 \text{ L} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 20 \text{ mL} = 2.0 \times 10^1 \text{ mL}$ (D)

⑦ $4.3 \times 10^3 \text{ g} \times \frac{1 \text{ kg}}{1000 \text{ g}} = 4.3 \text{ kg}$ (B)

⑧ $251 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1000 \text{ mm}}{1 \text{ m}} = \frac{2510}{1} \text{ mm} = 2.51 \times 10^3 \text{ mm}$ (A)

⑨ 10 mm

⑩ $4.96 \text{ kg} \times \frac{10^3 \text{ g}}{1 \text{ kg}} \times \frac{10^3 \text{ mg}}{1 \text{ g}} = \frac{4.96 \times 10^6}{1} \text{ mg}$

⑪ $683 \text{ mm} \times \frac{1 \text{ m}}{1000 \text{ mm}} \times \frac{100 \text{ cm}}{1 \text{ m}} = \frac{68.3}{1} \text{ cm}$

⑫ $25 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \frac{2.5 \times 10^{-2}}{1} \text{ L}$ $\frac{25}{1000} = 0.025$
0.025 L

⑬ $0.001 \text{ s} = 1 \text{ ms} = 10^{-3} \text{ s}$ (A)

⑭ Kg, but the best answer here is the gram (E)

