

Name the metric "base" unit for the following measurements:

1. length _____
2. mass _____
3. volume _____
4. temperature _____
5. 1 ml is equal to how many cm³ ? _____

Derived and Compound Units - Make the following metric conversions:

- | | |
|--|---|
| 6. 78.3 cm ³ _____ dm ³ | 14. 0.62 g/ml _____ g/L |
| 7. 1.05 km ² _____ m ² | 15. 0.370 g/mm ³ _____ g/cm ³ |
| 8. 15 cm ³ _____ L | 16. 9.70 g/ml _____ kg/L |
| 9. 0.060 cm ³ _____ ml | 17. 88 kg/dm ³ _____ g/cm ³ |
| 10. 45.3 m ² _____ cm ² | 18. 9.2 kg/ml _____ g/ml |
| 11. 0.0058 m ³ _____ cm ³ | 19. 0.0710 g/L _____ g/ml |
| 12. 0.0407 dm ³ _____ mm ³ | 20. 12 kg/L _____ g/ml |
| 13. 0.103 L _____ cm ³ | 21. 3,650 mg/L _____ g/ml |

Review – Make the following metric conversions:

- | | |
|-----------------------|--------------------------------------|
| 22. 8.6 m _____ cm | 30. 7.38 g _____ kg |
| 23. 32 mg _____ g | 31. 6.7 s _____ ms |
| 24. 0.260 L _____ ml | 32. 0.065 km _____ dm |
| 25. 5.61 km _____ mm→ | 33. 42.7 L _____ ml |
| 26. 0.044 km _____ m | 34. 642 cg _____ kg |
| 27. 4.6 mg _____ g | 35. 8.73x10 ⁹ mg _____ kg |
| 28. 8.9 m _____ dm | 36. 3.4 cm _____ mg |
| 29. 0.107 g _____ cg | 37. 0.020 kJ _____ J |

38. Which of the following linear measure is the longest?

hint: convert all the measurements to the same units - doesn't matter which units as long as they are all the same.

- a. 6×10^2 cm
- b. 0.06 km
- c. 6×10^5 dm
- d. 6×10^6 mm

- meters
- grams
- Liters
- °C
- the same 1.0 cm³memorize it.

Derived Units

- 0.0783 dm³
 - Remember when changing cubed and squared units, you move the decimal point the appropriate number of places per the prefix change but ×2 if squared units and ×3 if cubed units.
- 1,050,000 m²
- 0.015 L Don't forget that 1 cm³ = 1 ml.
- 0.060 ml
- 453,000 cm²
- 5800 cm³
- 40,700 mm³
- 103 cm³
- $\left(\frac{0.62g}{1ml}\right)\left(\frac{1000ml}{1L}\right) = 620g / L$
- $\left(\frac{0.370g}{mm^3}\right)\left(\frac{10mm}{1cm}\right)\left(\frac{10mm}{1cm}\right)\left(\frac{10mm}{1cm}\right) = 370.g / cm^3$
- $\left(\frac{9.70g}{1ml}\right)\left(\frac{1kg}{1000g}\right)\left(\frac{1000ml}{1L}\right) = 9.70kg / L$
(In effect the unit changes cancel each other out.)
- $\left(\frac{88kg}{dm^3}\right)\left(\frac{1000g}{1kg}\right)\left(\frac{1dm}{10cm}\right)\left(\frac{1dm}{10cm}\right)\left(\frac{1dm}{10cm}\right) = 88g / cm^3$
(Again, the unit changes cancel each other out.)
- $\left(\frac{9.2kg}{1ml}\right)\left(\frac{1000g}{1kg}\right) = 9,200g / ml$
- $\left(\frac{0.0710g}{1L}\right)\left(\frac{1L}{1000ml}\right) = 0.0000710g / ml$
- $\left(\frac{12kg}{1L}\right)\left(\frac{1L}{1000ml}\right)\left(\frac{1000g}{1kg}\right) = 12g / ml$
(Again, the unit changes cancel each other out.)
- $\left(\frac{3,650mg}{1L}\right)\left(\frac{1g}{1000mg}\right)\left(\frac{1L}{1000ml}\right) = 0.00365g / ml$

More Review

- 860 cm
- 0.032 g
- 260 ml
- 5,610 m 5,610,000 mm
- 44 m
- 0.0046 g
- 89 dm
- 10.7 cg
- 0.00738 kg
- 6,700 ms
- 650 dm
- 42,700 ml
- 0.00642 kg
- 8.73×10^3 kg
- this conversion can not be done, since you can't convert a length to a mass
 - that would be like trying to change inches to pounds
20. J (note the decimal point to indicate 2 sig figs)
- Convert each to same units (I chose cm) then compare
 - 600 cm
 - 600 cm
 - 6,000,000 cm
 - 600,000 cm*clearly c is the larger measurement*