

Scientific method and measurement

Exercises

1.- Express these quantities in SI units:

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|--|----------------------|
| 1. Earth radius: 6,37 Mm | (m) |
| 2. Volume of a drop of water: 0,05 ml | (m ³) |
| 3. Mass of an ant: 0,5 mg | (kg) |
| 4. Spain area: 504000 km ² | (m ²) |
| 5. Madrid area: 60800 ha | (m ²) |
| 6. Liver cell: 200 μm | (m) |
| 7. Radius of Hydrogen atom: 5 nm | (m) |
| 8. Energy of LHC collisions: 4,5 Tev | (eV) |
| 9. Internet connection: 180 Gbytes/h | (bytes/s) |
| 10. Density of aluminium: 2,7 g/cm ³ | (kg/m ³) |
| 11. Speed of light: 1080 Gm/h | (m/s) |
| 12. Formula 1 speed record: 413 km/h | (m/s) |
| 13. Speed limit UK: 70 miles/h | (m/s) |
| 14. Water viscosity: 1 g/cm.s | (kg/m.s) |
| 15. Madrid annual rainfall: 420 l/m ² | (m) |

2.- Convert these quantities using the units in brackets

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|------------------------------|-----------------------|
| 1. 13 g/cm ³ | (kg/m ³) |
| 2. 5700 cm | (km) |
| 3. 750 cm ³ | (m ³) |
| 4. 0,00064 kg.m/s | (g.cm/s) |
| 5. 9500 cg | (kg) |
| 6. 83 t/h | (kg/s) |
| 7. 18 μm | (m) |
| 8. 43 m ³ /h | (cm ³ /s) |
| 9. 0,0057 km | (cm) |
| 10. 82 MHertz | (Hertz) |
| 11. 32 m ² | (cm ²) |
| 12. 0,06 litros | (ml) |
| 13. 0,0002 g/cm ² | (kg/m ²) |
| 14. 25 m/s | (km/h) |
| 15. 12 t/m ² | (kg/cm ²) |

3.- Find the correct value with the suitable number of significant figures

1. Volume of a room which has 4,52 m x 5,75 x 2,55 m
2. Total mass of three books which have 2520 g, 2675 g, 1530 g
3. Density of a steel sphere 35,5 g and 4,5 cm³
4. Speed of a car which travels 85500 m in 45 minutes
5. Area of a sheet of paper which has 295 mm x 210 mm

4.- Express these quantities with scientific notation

1. Earth-Sun distance: 1496000000 m
2. Proton radius: 0,000000000000001 m
3. Electron charge: 0,000000000000000016 C
4. Universe age: 13700000000 years
5. Earth mass: 5980000000000000000000 kg