Conversions and Significant Figure worksheet

Convert:

1. $1.487 \times 10^{-8}$ nm to m: $1.487 \times 10^{-17}$ m
2. $4.15 \times 10^7$ pm to μm: 41.5 m
3. $8.97 \times 10^{-4}$ MW to mWatts: $8.97 \times 10^5$ mW
4. $0.000429$ km³ to cm³: $4.29 \times 10^{11}$ cm³
5. $59.42$ ft² to m²: 5.520 m²
6. $6.47 \times 10^{-2}$ L to mm³: $6.47 \times 10^4$ mm³
7. $19.5$ g/cm³ to kg/m³: $1.95 \times 10^4$ kg/m³
8. $10.5$ g/mL to pound/gallon: 87.6 pounds/gal
9. $8.29$ ¢/pound to $$/kg: $0.183/kg
10. 1 km/100 L to miles/gallon: 0.0235 mi/gal

Answer with the proper Significant figures:

11. $(1.009 \times 10^{-2}$ m $+ 2.914 \times 10^{-3}$ m) $\times 4.129 \times 10^{-9}$ m = $5.368 \times 10^{-11}$ m²
12. $9.2735 / (9.457–8.693) =$ 12.1
13. $(4.598 + 33.7 + 57.1) \times 2.9178 \times 10^{-4} =$ 0.0278
14. $(1.41 \times 10^{-7} \times 2.98 \times 10^{-5} \times 1.10 \times 10^2) \div (4.129 \times 10^{-3})^3 =$ 0.00657

Mass–Mole ratios

15. Calculate the molar mass of dinitrogen tetraiodide, phosphorus pentachloride, and aluminum phosphate.
   - N₂I₄ = 535.63 g/mol
   - PCl₅ = 208.34 g/mol
   - AlPO₄ = 121.95 g/mol
16. How many mol of Ne is in 89.7 g of this gas? [Ne has no known compounds; it seems to be inert.]
   4.44 mol of Ne atoms
17. How many mol of Hg atoms are in 1.63×10⁻² g of the metal? [Hg is liquid at room temperature]
   8.13×10⁻⁶ mol Hg atoms
18. How many oxygen atoms (in an actual number) are in 7.42×10⁻¹⁴ moles of ozone [O₃] molecules?
   1.34×10¹³ atoms of O (Ozone has 3 O atoms per molecule)
19. What mass, in g, of lead is present in 5.29×10⁻³ mol of the metal?
   1.10 g of Pb
20. What mass, in mg, of sodium sulfate is present in 4.51×10⁻⁴ mol of this compound?
   64.1 mg
21. How many moles of ammonium carbonate corresponds to 8.715 g of this compound?
   0.0907 mol of (NH₄)₂CO₃