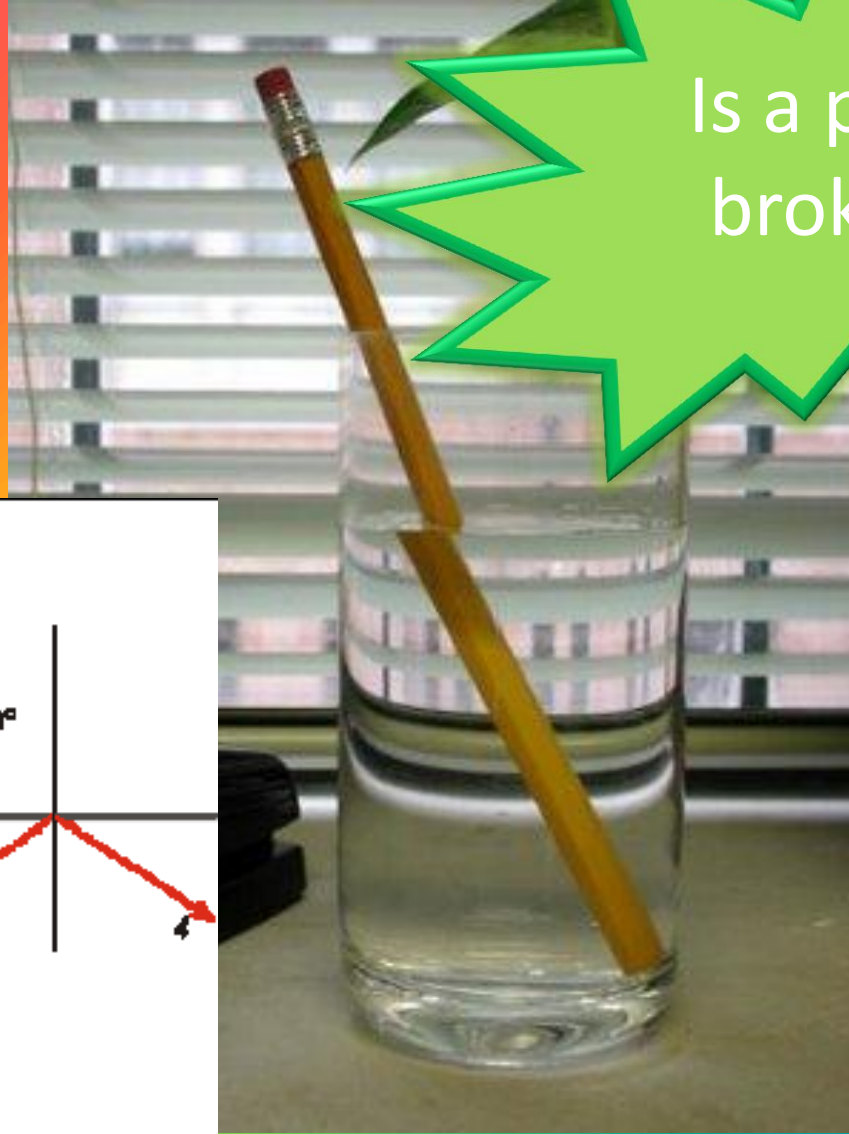
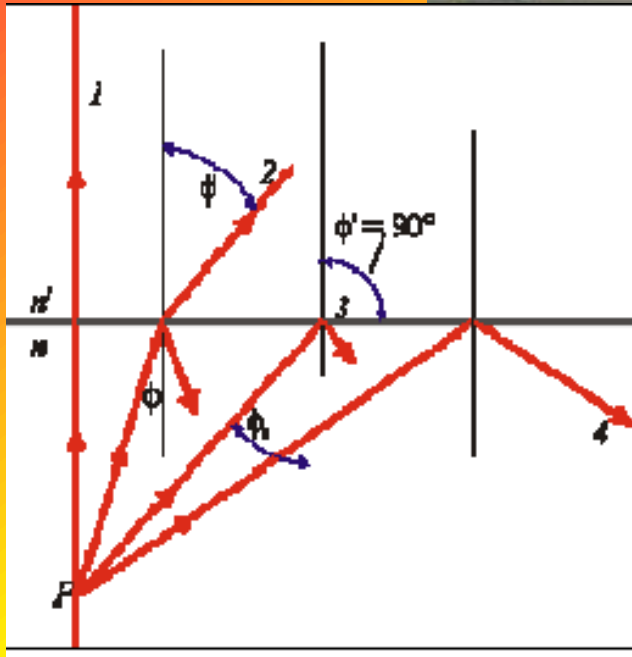
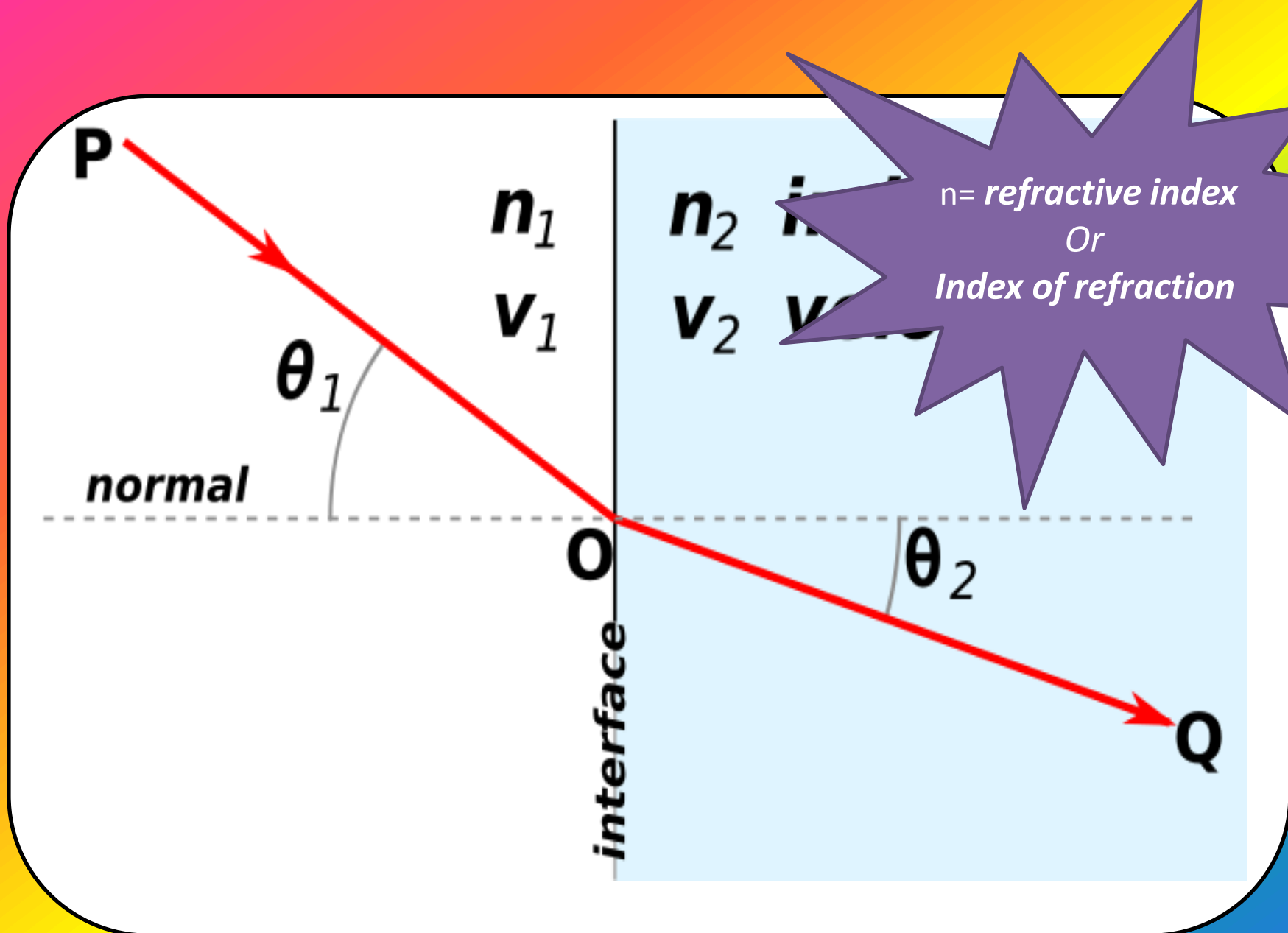


Refractometer

Is a pencil
broken ?





$n =$ refractive index
Or
Index of refraction

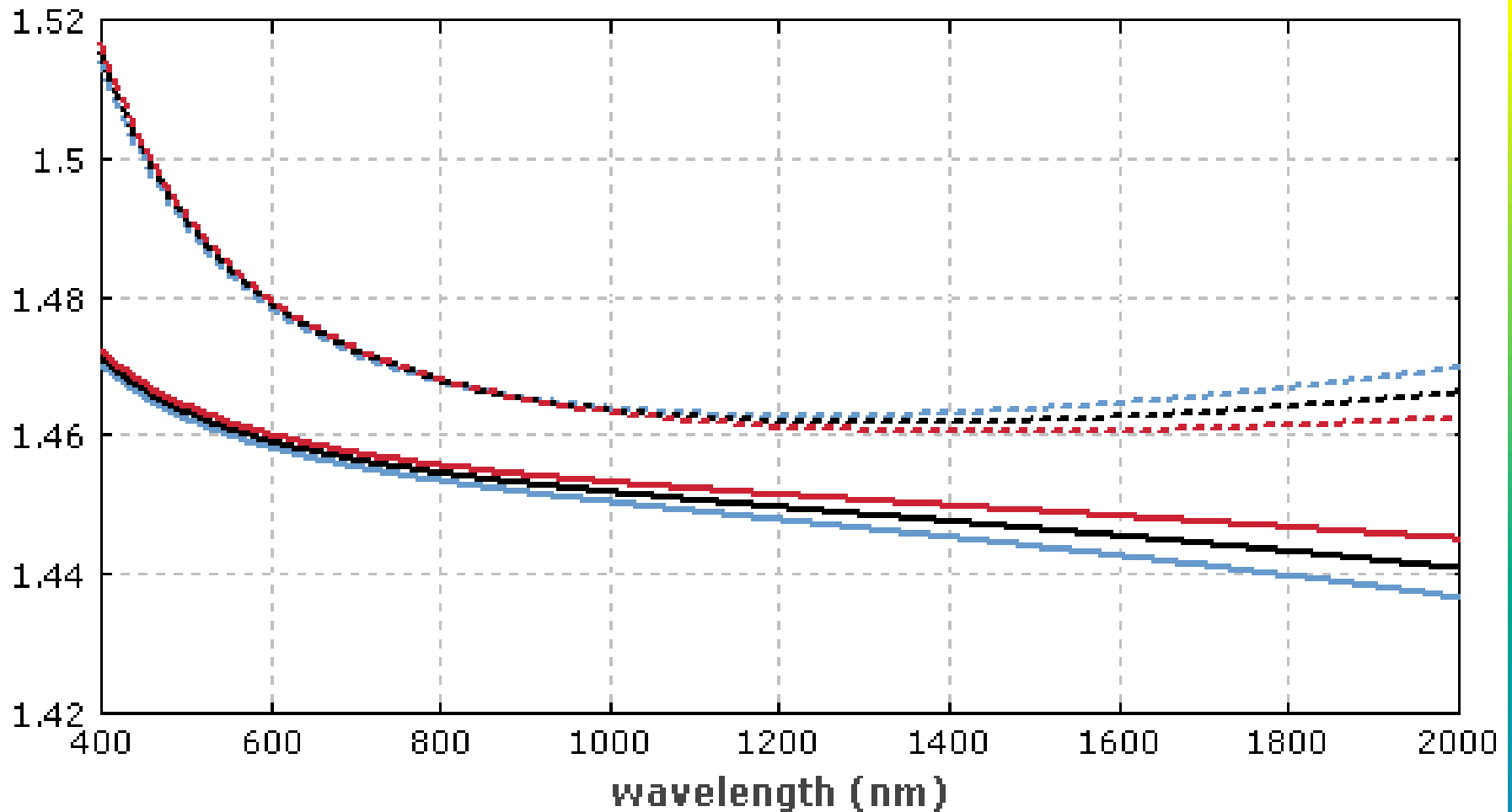
Refractive index

- Physical property that is characteristic of a pure compound. Like a melting point, it can be used to confirm the identity of a compound, or to assess its purity, by comparison with a known (literature) value.

Material	λ (nm)	n
Vacuum		1 (per definition)
Air @ STP		1.000277
Gases @ 0 °C and 1 atm		
Air	589.29	1.000293
Helium	589.29	1.000036
Hydrogen	589.29	1.000132
Carbon dioxide	589.29	1.00045
Liquids @ 20 °C		
Benzene	589.29	1.501
Carbon disulfide	589.29	1.628
Carbon tetrachloride	589.29	1.461
Ethyl alcohol (ethanol)	589.29	1.361
Silicone oil		1.52045
Water	589.29	1.3330
Arsenic trisulfide and sulfur in methylene iodide		1.9
Solids @ room temperature		
Diamond	589.29	2.419
Strontium titanate	589.29	2.41
Amber	589.29	1.55
Fused silica (also called Fused Quartz)	589.29	1.458
Sodium chloride	589.29	1.50

Factor affecting refractive index:

- Temperature
- $n_D^{25} = n_D^y - (25.0 - y)(0.00045)$
- Light wavelength
- Concentration
- Pressure



Refractive index (solid lines) and group index (dotted lines) of silica versus wavelength at temperatures of 0 °C (blue), 100 °C (black) and 200 °C (red). The plots are based on data from M. Medhat et al., J. Opt. A: Pure Appl. Opt. 4, 174 (2002).

Uses of Refractometer

- Ensure the purity of a sample
- Determine the concentration of a sample
- $R = (n^2 - 1) * M.wt / (n^2 + 2) d$
- Detect the maturity level of grape by testing the sugar level
- Gemology



Instrument

