

## MAGNITUDE

### SOUND PRESSURE

(force/unit area)

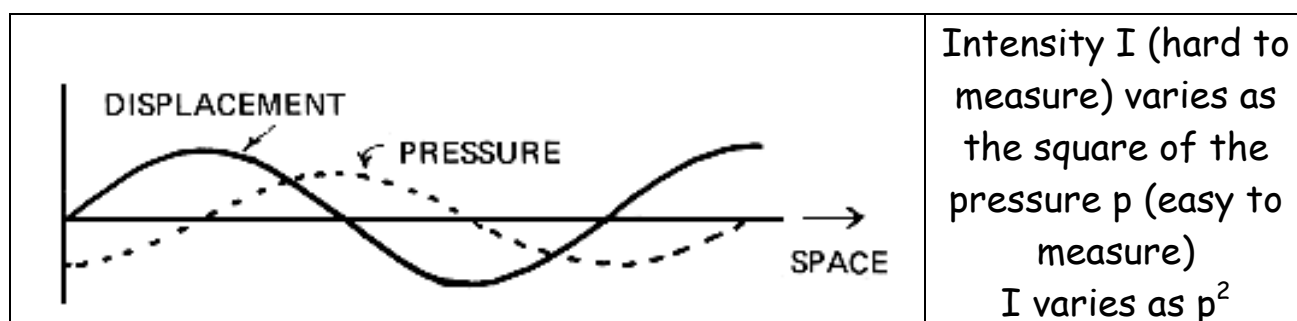
- AMPLITUDE
- DISPLACEMENT

measured in:  $\mu\text{bar}$  (microbar)  
or  $\text{dynes}/\text{cm}^2$  or  $\text{N}/\text{m}^2$

### SOUND INTENSITY/POWER

- ENERGY FLOW
- RATE OF ENERGY FLOW

watts/ $\text{m}^2$



### SOUND PRESSURE LEVEL

### INTENSITY LEVEL

- "level" means a measurement, e.g. SPL, IL
- is relative, not absolute (i.e. always has a reference, 0 dB)
- is logarithmic and measured in decibels, dB

e.g.  $\times 2$  intensity = +3dB

$\times 2$  sound pressure or amp = +6dB

$\times 10$  intensity = + 10 dB

$\times 100$  intensity = + 20 dB

$\times 1000$  intensity = + 30 dB

- SOUND LEVEL is intensity level measured with a weighting scale, e.g. A, B, C, .... in dBA, dBB, dBC etc whereas SPL is unweighted

### PSYCHOACOUSTICS: LOUDNESS / VOLUME

Loudness may be measured in SONES based on PHONS as in the Equal Loudness Contours

Volume is a multi-dimensional concept based on the perceived magnitude of a sound