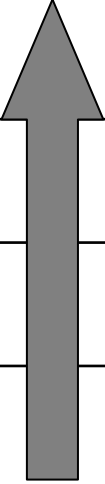
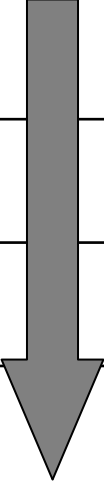
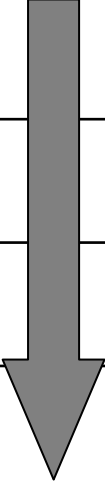


Wavelength vs. Frequency

$$c = v\lambda \quad \lambda = c/v \quad v = c/\lambda$$

- Know frequency \rightarrow wavelength
- Know wavelength \rightarrow frequency
- High frequency \rightarrow low wavelength

Electromagnetic Spectrum

Radio	Long wavelength	Low frequency	Low energy
Infrared			
Visible Red Green Blue			
Ultraviolet			
X-rays			
Gamma rays			
Gamma rays	Short wavelength	High frequency	High energy

Electromagnetic Spectrum

	Wavelength	Frequency (Hz)
Radio	Few km to 1 mm	300 to 3×10^{12}
Radio AM	About 300 m	535-1705 kHz
Radio TV Ch. 4	4.3 m	66-72 MHz
Radio FM	About 3 m	88.1-107.9 MHz
Radio TV Ch. 29	53 cm	560-566 MHz
Microwave oven	12 cm	2.45 GHz
Infrared	1 mm to 700 nm	10^{12} to 10^{14}

Electromagnetic Spectrum

	Wavelength	Frequency (Hz)
Visible red	700 nm	About 10^{14}
Visible green	500 nm	About 10^{14}
Visible blue	400 nm	About 10^{14}
Ultraviolet	20-400 nm	10^{15} to 10^{17}
X-rays	0.01-20 nm	10^{16} to 10^{20}
Gamma rays	< 0.01 nm	> 10^{20}