National Defense Education Program Conservation of Energy Workshop

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General Atomics

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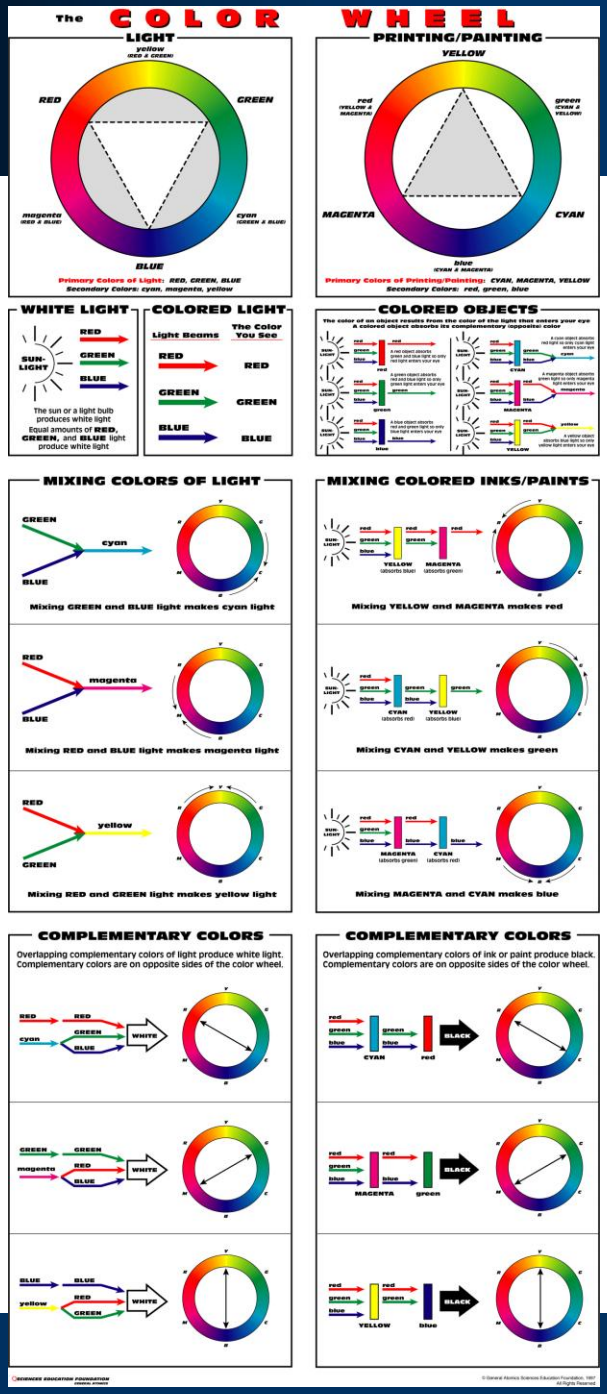


- Color wheel poster shows additive and subtractive color mixing
- Subtractive color mixing can be discussed using energy conservation

Concept Map for Color

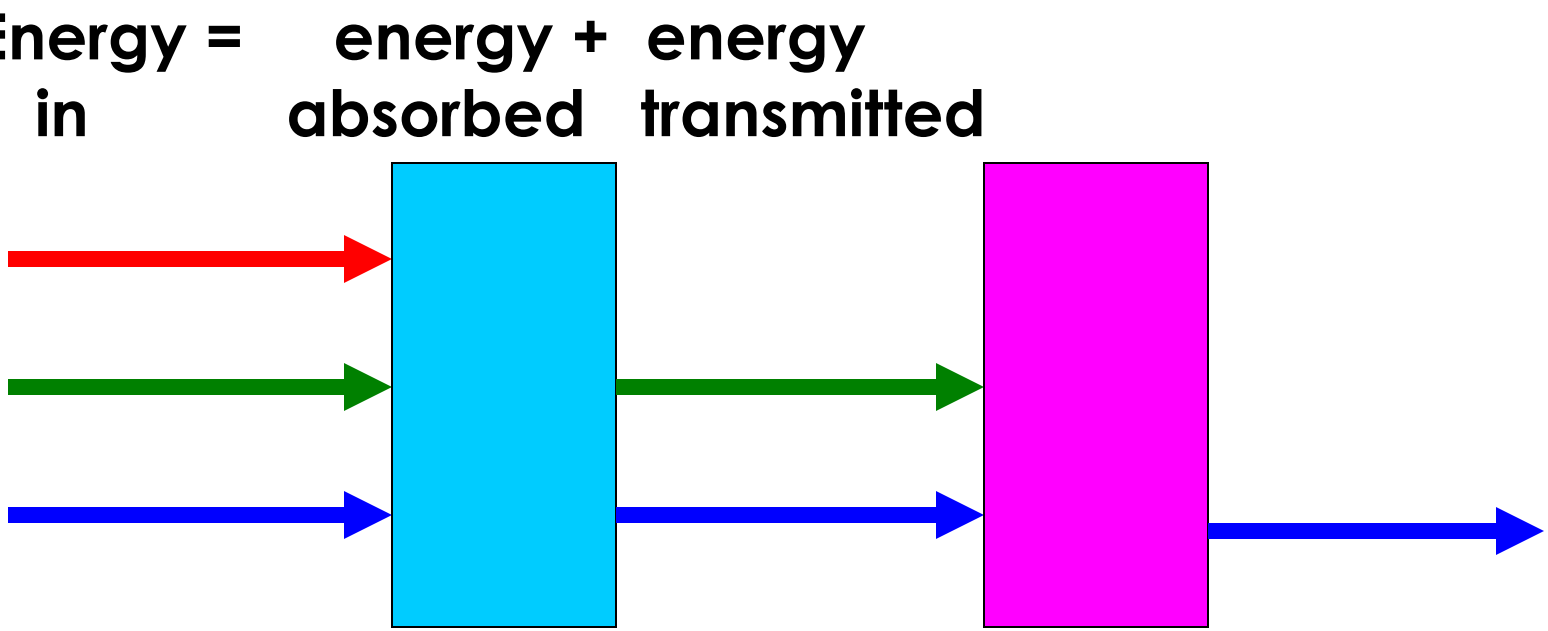
Energy is conserved

Energy is conserved when light interacts with matter:

$$E_{in} = E_{reflected} + E_{transmitted} + E_{absorbed}$$

Color results from selective absorption of visible light

Energy conservation: colored objects



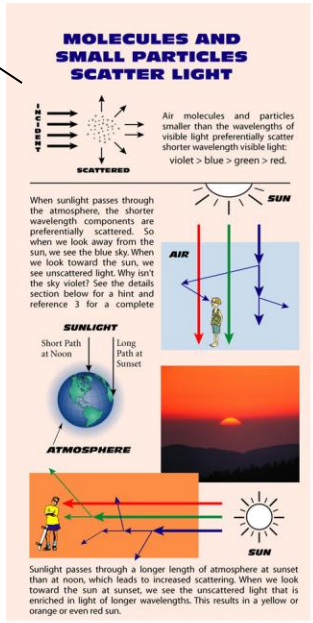
(R +G +B) -R = G +B

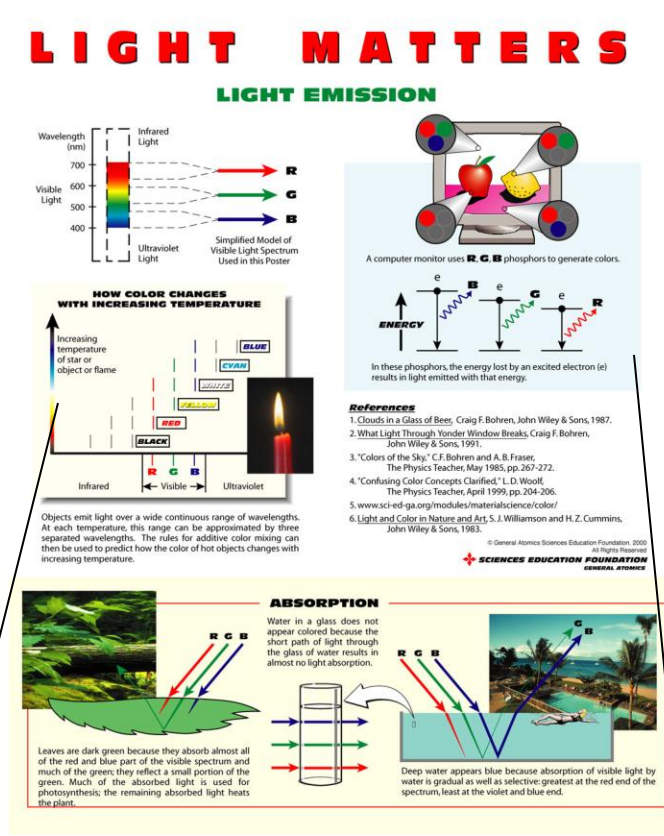
G +B -G = B

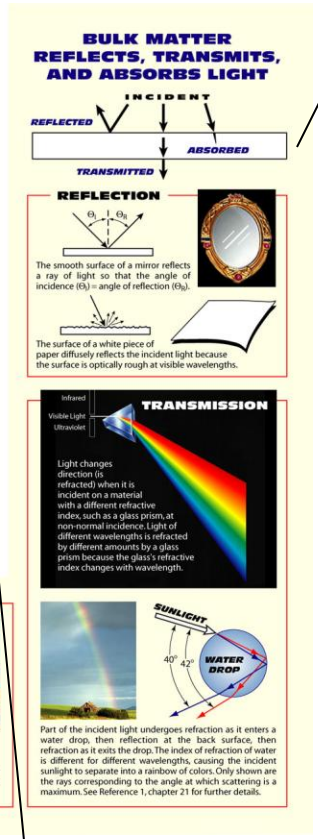
Interaction of Light with Matter in context of Energy Conservation

Energy in = energy transmitted (scattered)

Energy in = energy reflected + energy transmitted + energy absorbed

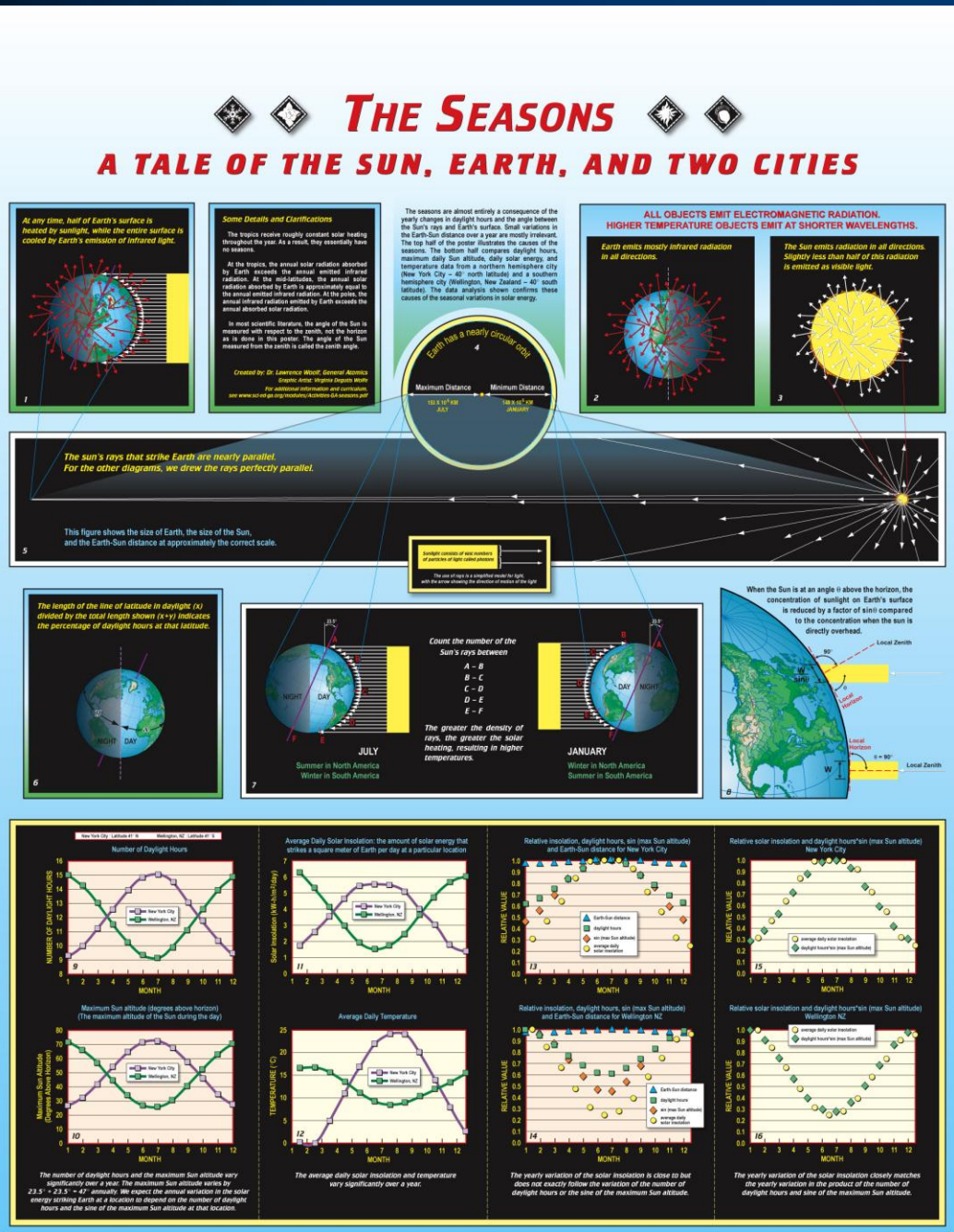






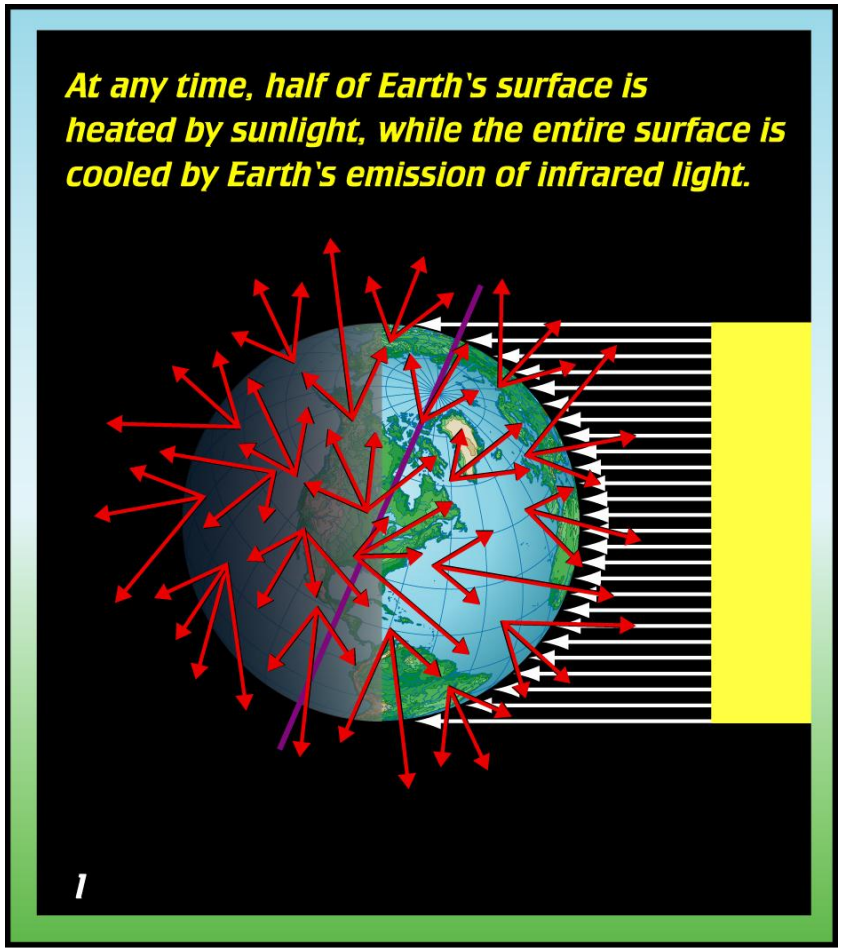
Energy in (heating) = energy emitted (light)

"Potential energy" of electron in atom = energy of emitted photon



Understanding reasons for seasons in context of energy conservation

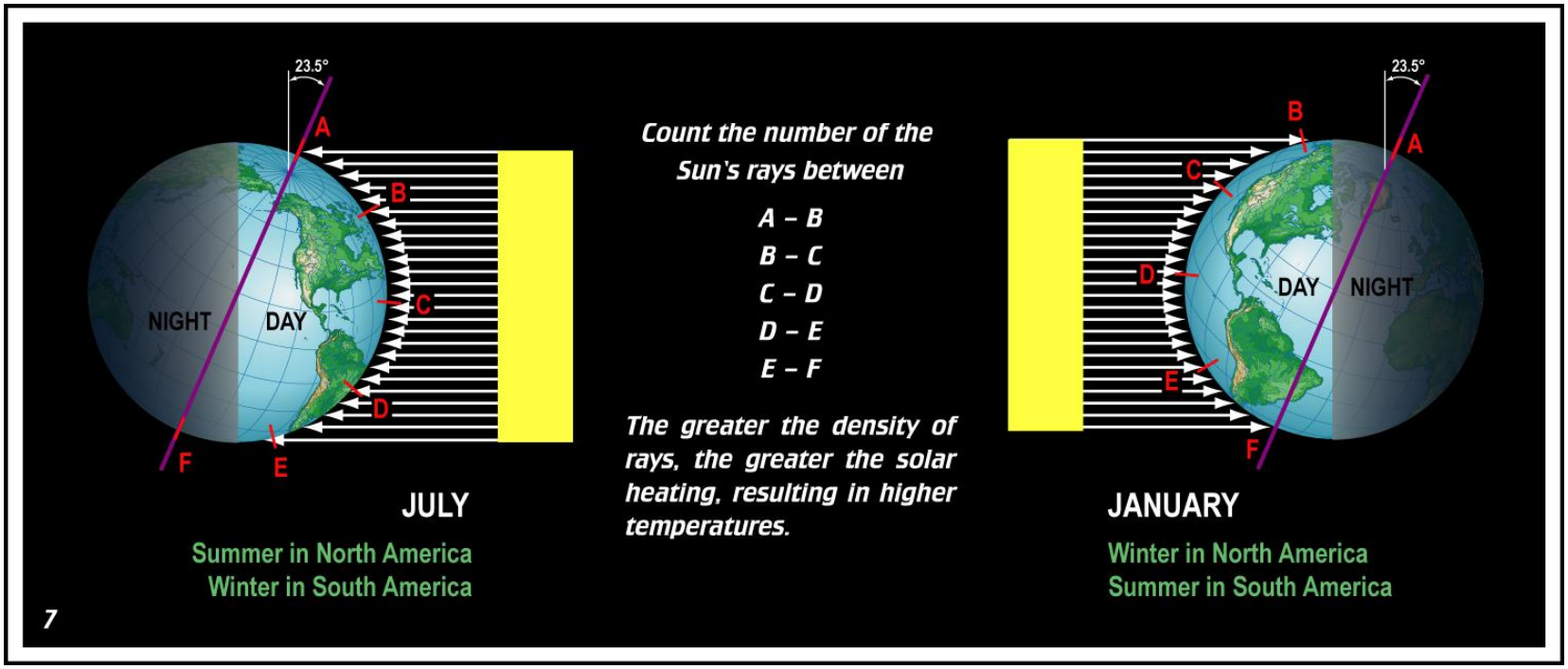
Energy conservation: temperature of the entire Earth



Energy in (sunlight) =
Energy absorbed (heating) =
Energy out (infrared light)

(Simplification: Actual energy flows are complex)

Energy conservation: climate variation



Energy in (from sunlight) = Energy absorbed (heating)