B-day: Due Fri., Feb 9 (Assigned Wed., Feb 7)
A-day: Due Mon., Feb 12 (Assigned Thurs., Feb 8)

Light 1

1. Photon	A. The fastest speed in the universe: the speed of light.	1. Radio waves	A. Electromagnetic waves we feel as heat.
2. 3×10^8 m/sec	B. An orbit of electrons. To move from low to high requires energy.	2. Infrared	B. Dangerous EM waves that have very high energy and come from nuclear reactions.
3. Prism	C. All light: visible and invisible.	3. Ultraviolet	C. EM waves that have very low energy and long wavelengths.
4. Light	D. Used to separate white light into its colors.	4. X-rays	D. EM waves that can pass through skin and have short wavelengths.
5. EM Spectrum	E. A single particle or packet of light.	5. Gamma rays	E. EM waves with more energy than visible light and can cause sunburns.
6. Energy Level	F. A wave that can travel through a vacuum.	6. Microwaves	F. Long wavelengths; used in cell phones.

Is light a wave or a particle. Prove your answer:

Put these three in order from slowest to fastest:

Light waves; sound waves; water waves.

_____

Where does light come from?

Put these from shortest to longest wavelengths

Radio waves Ultraviolet X-rays Visible Microwaves

_____

Why do we see lightening and hear the thunder a few seconds later?

Put these from least energy to most energy.

Radio waves Ultraviolet X-rays Visible Microwaves

_____

Let's remember our prefixes: Kilo means $x10^3$ (1000g = 1 kg); Mega means $x10^6$ (1,000,000 m = 1 Mm); 1 nanometer = 1×10^{-9} m.

Express 8 nm in meters (with scientific notation).

Visible light is around 500 nm. Write it in meters (in scientific notation).

Express 750 nm as meters.

What is 750 nm: period, frequency, amplitude, speed, or wavelength?

Since you know the speed of light, find the frequency of 750 nm light.

Find the wavelength of a light wave with a frequency of 25 cm long wave (be sure to change it to meters).

Light 1

1. Pigment	A. A color model that uses pigments on a white background.
2. Magenta	B. A color made from red and green.
3. Cyan	C. Dyes and paints are a type of this.
4. Yellow	D. A color made from blue and red.
5. RGB	E. A color model that uses lights on a black background.
6. CMYK	F. A color made from green and blue.

Draw the color chart here:

Decide if the following use RGB or CMYK and why.

Television: _____Why? _____

Paint on a wall:_____Why? _____

Movie Theater:_____ Why? _____

Color Printer: _____ Why? _____

What color does Magenta absorb?

What color does Cyan absorb?

What color does Yellow absorb?

What color is a stop sign?

Does a stop sign use additive or subtractive color?

What two colors would a printer use to make this color?

Make the following additive colors using RGB.

Cyan _____ White _____ Yellow _____

Red _____ Magenta _____ Black _____

Make the following subtractive colors using CMYK.

Blue _____ White _____ Green _____

Red _____ Magenta _____ Black _____

What would happen if you used green light to grow plants and why?