

### LIGHT REVIEW SHEET

Answer the following in two or more full, thoughtful sentences?

1a. What is the source of all electromagnetic waves?

Accelerating (or vibrating) Charges

b. How fast do light, radio waves, microwaves, etc. travel in a vacuum?

SPEED of Light  $3.0 \times 10^8$  m/s

3a. Write the electromagnetic spectrum in order of increasing energy.

Radio, micro, IR, ROYGBIV, UV, X-Rays, Gamma

b. in order of increasing wavelength.

Gamma  $\rightarrow$  Radio

c. in order of increasing frequency.

Radio  $\rightarrow$  Gamma

4. Why does light travel faster through a vacuum than through a medium?

It interacts with the medium slowing it down.

5. What happens to various parts of the electromagnetic spectrum when they strike glass? Give examples.

Some Pass Through  $\rightarrow$  Light

Some are blocked UV-IR

6. What does the word transparent mean? What does opaque mean?

TRANSPARENT  $\rightarrow$  Light can Pass Through

OPAQUE  $\rightarrow$  Light cannot Pass Through

7. What is the difference between polarized and unpolarized light? How can you tell if light is polarized?

Polarized Light Is ALLigned in the same Plane

8. Define both black and white.

Black is the mixture of all Pigment color

White is the mixture of all Light colors

9. What are the primary colors of light?

Red, Blue, Green

10. Define and give examples of complementary colors.

Two Light colors that are mixed & produce white  
Magenta + Green

11. Distinguish between color mixing by addition and color mixing by subtraction?

Light is mixed By addition

Pigments are mixed By subtraction → Magenta subtracts GREEN

12. Why is the sky blue during the day but red at sunset and sunrise?

Blue Light is scattered

13. Why is water cyan? Why do lobsters look black from above water?

Black - Red is filtered out

14. How do you know what elements are in the sun and what instruments are used to determine this?

By Examining the sun's spectra

15. What colors would the following objects appear in each color light?

color in white light	red	green	magenta B+R	cyan B+G	yellow R+G
color in blue light	Black	Black	BLUE	BLUE	Black
color in cyan light B+G	Black	Green	BLUE	CYAN	Green
color in yellow light R+G	RED <del>Black</del>	Green	Red	Green	yellow