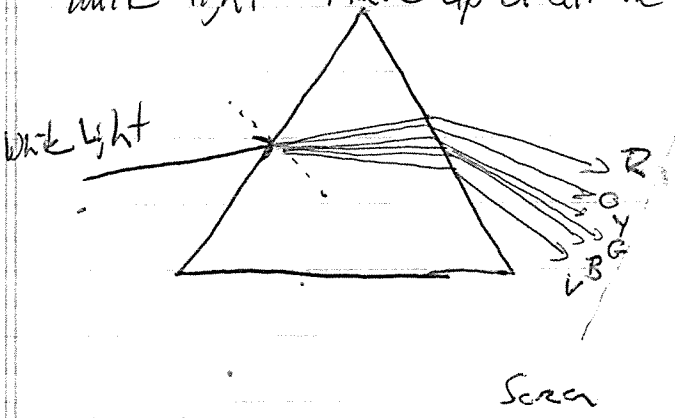
Dispersion - Separating the colors of white light
white light - Made up of all the colors



Dispersion occurs because the speed of light in a prism depends on the color of the light

Red light

Smallest → Biggest $V = f\lambda$ → Biggest (Bends the
Freq Wavelength ↑ ↑ Velocity least)

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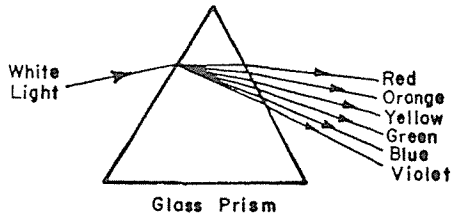
Name: _____ **Date:** _____

Phyics: Dispersion

1. Which phrase best describes the phenomenon illustrated by the diagram below?



(1) scattering and diffraction
(2) reflection and interference
(3) transmission and Doppler effect
(4) refraction and dispersion

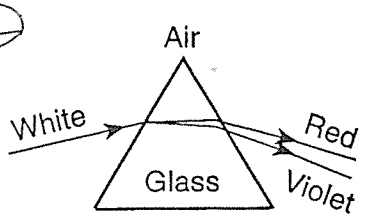
2. The separating of polychromatic light into its component frequencies as it passes through a prism is called
(1) interference
(2) diffraction
(3) diffusion
(4) dispersion

3. Compared to the speed of light in a vacuum, the speed of light in a dispersive medium is
(1) less
(2) greater
(3) the same

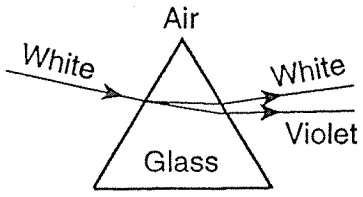
4. When a ray of white light is refracted and dispersed, the component color that has the greatest change in direction is
(1) orange
(2) red
(3) violet
(4) green

5. Which diagram best represents the path of light rays passing through a glass prism?

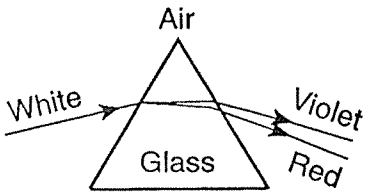
(1)



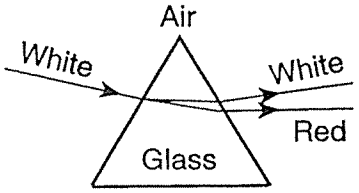
(2)



(3)



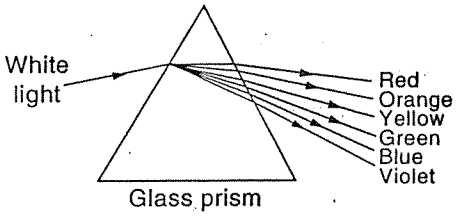
(4)



1. Compared to the speed of light in a vacuum, the speed of light in a dispersive medium is
(1) less (2) greater (3) the same

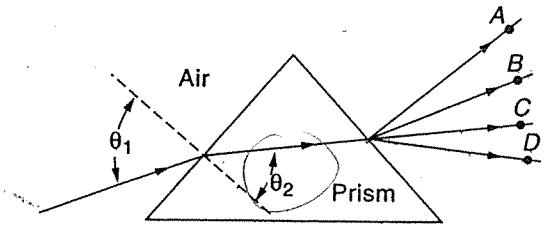
2. Monochromatic light cannot be
(1) dispersed (2) absorbed (3) reflected (4) refracted

3. Which terms best describe the phenomenon illustrated by the diagram below?



(1) scattering and diffraction (3) transmission and Doppler effect
(2) reflection and interference (4) refraction and dispersion

Base your answers to questions 4 through 8 on the diagram below, which represents a ray of monochromatic green light incident upon the surface of a glass prism.



4. The index of refraction of the glass prism for green light equals
(1) $\frac{\theta_1}{\theta_2}$ (2) $\frac{\theta_2}{\theta_1}$ (3) $\frac{\sin \theta_2}{\sin \theta_1}$ (4) $\frac{\sin \theta_1}{\sin \theta_2}$

5. After the ray leaves the prism, it will most likely pass through point
(1) *A* (2) *B* (3) *C* (4) *D*

6. If the monochromatic green ray is replaced by a monochromatic red ray, θ_2 will
(1) decrease (2) increase (3) remain the same

7. Compared to the speed of the monochromatic green light in the prism, the speed of the monochromatic red light in the prism is
(1) less (2) greater (3) the same

8. Compared to the frequency of the green light in the prism, the frequency of the red light in the prism is
(1) less (2) greater (3) the same