مدرستنا العليا الخاصة، الورقاء
OUR OWN HIGH SCHOOL, AL WARQA'A

EDUCATION

PHYSICS – LIGHT REFLECTION AND REFRACTION

Name: **Grade: 10 Sec:** **Date:**

POWER OF LENS

FORMULAS::

1. Power of Lens: P = 1/f
* The SI Unit of power is diopter. It's denoted by the letter "D".
* Focal length of the lens is expressed in meter.
* A lens of focal length 100cm has a power of one diopter then i.e; 1 diopter = $1m^{-1}$
*Power of the converging or convex lens is taken as +ve while the power of diverging or concave lens is –ve.
*Power of a lens is measured by an instrument called dioptremeter.

2. Lenses in Combination:
* When 2 or more lenses are used in combination, the converging or diverging power varies.
* The equivalent focal length F of 2 lenses of focal f_1 and f_2 in contact is given by, $1/F = 1/f_1+1/f_2$, and so, the power of the combination P is, $P = P_1 + P_2$.

:: ***NUMERICALS::***

Q.1. The power of converging lens is 4D and that of a diverging lens 2.5D. What is the resultant power and the nature of this combination of lenses placed closed together?

Q.2. (a) Two lens have power of (i) +2D (ii) -4D. What is the nature and focal length of each lens?
(b) An object is kept at a distance of 100cm from each of the above lenses. Calculate the:
(i) Image distance (ii) Magnification in each of the two cases.

Q.3. A student uses a lens of focal length 50cm and another of -50cm. What is the nature of the lens and its power used by each of them?

Q.4. A convex lens has a focal length of 40cm. Calculate its power.

Q.5. A convex lens of focal length 25cm and a concave lens of focal length 10cm are placed in close contact with each other calculate the lens power of this combination.