L E N S E S A N D T H E F O R M A T I O N O F I M A G E S

(Nelson Science Perspectives 10, pg. 551-553)

BASIC LENS SHAPES

Lenses consist of two basic types. The first is a _____ lens, named because _____ light rays _____ through a single point after _____ through the lens. the converging lens is _____ in the middle and _____ at the edge.

The second kind of lens is a _____ lens in which _____ light rays _____ after _____ from the lens. A diverging lens is _____ in the middle and _____ at the edge.

Draw Fig. 1A

Draw Fig. 2A

SIMPLIFYING THE PATH OF LIGHT RAYS THROUGH A LENS

Light is refracted at the first _____ to _____ surface. Light then travels through the _____ of the lens and is _____ again at the _____ to _____ surface on the other side. This means there are _____ refractions in a lens. Ray diagrams can be greatly simplified by drawing a dashed _____ line through the centre of the lens and showing refraction at this line. The central line is only a reference point. (see Fig. 3A and B).

THE TERMINOLOGY OF CONVERGING LENSES

The centre of the lens is called the _____ _____ (O). The line through the optical centre perpendicular to the central dashed line is the _____ axis. Light rays parallel to the _____ axis converge through a single point on the PA called the _____ _____ (F). Light can strike the lens from _____ side, and both sides of the lens can focus _____ light rays. The focus that is on the same side of the lens relative to the _____ rays is usually labelled as the _____ principal focus (F').

Draw Fig. 4

THE TERMINOLOGY OF DIVERGING LENSES

Light rays parallel to the _____ axis of a diverging lens do NOT _____. Instead, the refracted rays spread apart. If you project these rays backwards, it looks as if they come from a _____ focus. This point is now the _____ focus (F). The secondary principal focus (F') is now on the _____ side of the lens, where the rays actually _____. Note that F and F' are _____ far apart from the _____ centre of both types of lenses.

Draw Fig. 5

E X P E R I M E N T: L O C A T I N G I M A G E S I N L E N S E S (pg. 554-555)

OBJECT LOCATION	SIZE OF MAGE	ATTITUDE OF IMAGE	LOCATION OF IMAGE	TYPE OF IMAGE
beyond 2F'				
at 2F'				
between 2F' & F'				
at F'				
inside F'				