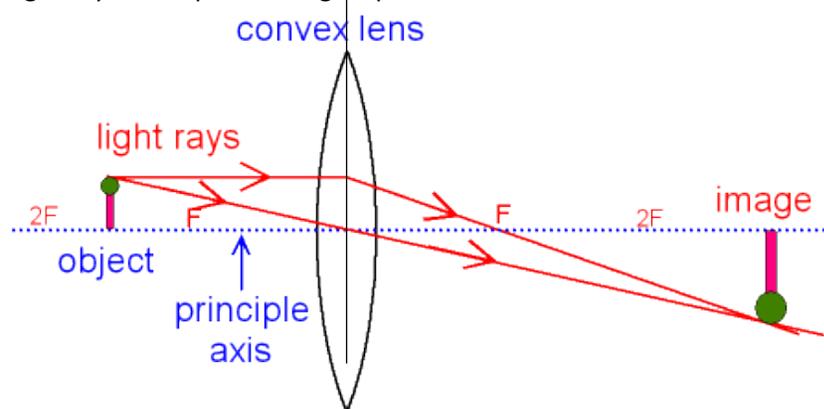


Light – PHYSICS ONLY

1. A lens forms an image by **refracting** (bending) light.
2. In a convex lens, parallel rays of light are brought to a focus at the **principal focus**.
3. The distance from the lens to the principal focus is called the **focal length**.
4. **Ray diagrams** are used to show the formation of images by convex and concave lenses.
5. The image produced by a convex lens can be either **real or virtual**.
6. A **real image** is one formed when light rays from a point on an object come together at another point.
7. A **virtual image** is one where the image appears in front of the lens. The light rays don't pass through a point.

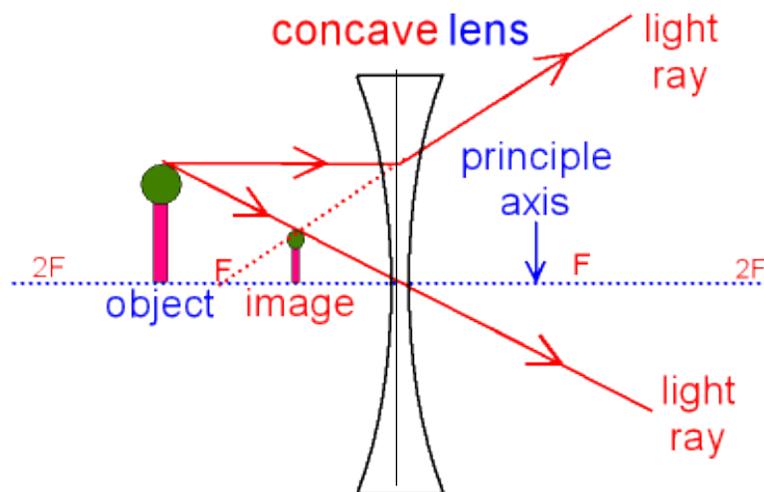


8.

OBJECT	IMAGE			
Location	Size	Attitude	Location	Type
Beyond $2F$	Smaller	Inverted	Between $2F$ and F	Real
At $2F$	Same size	Inverted	At $2F$	Real
Between $2F$ and F	Larger	Inverted	Beyond $2F$	Real
At F	No clear image			
Inside F	Larger	Upright	Same side as object (behind lens)	Virtual

9.

10. A concave lens always produces a virtual image (one where the image appears in front of the lens).



- 11.
12. The image is always the right way up and smaller than the object.
13. It always appears on the same side of the lens as the object, no matter where it is.

14. The magnification produced by a lens can be calculated using the equation: **magnification = image height ÷ object height.**

15. Magnification is a ratio and so has no units.
16. Image height and object height should both be measured in either mm or cm.

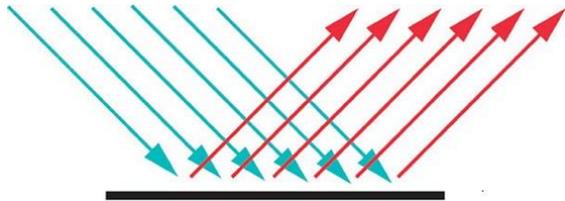
17. In ray diagrams a convex lens will be represented by:

18. A concave lens will be represented by:

Light – PHYSICS ONLY

19. Each colour within the visible light spectrum has its own narrow band of **wavelength** and **frequency**.

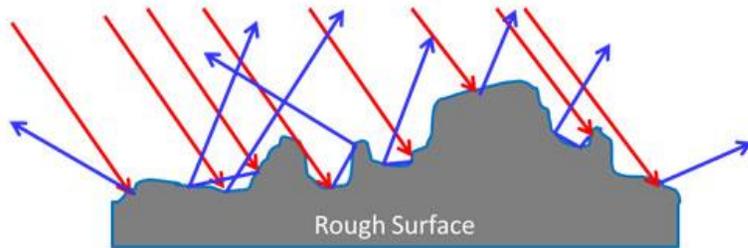
20. Reflection from a smooth surface in a single direction is called **specular reflection**.



Specular Reflection
(smooth surfaces)

21.

22. Reflection from a rough surface causes scattering: this is called **diffuse reflection**.

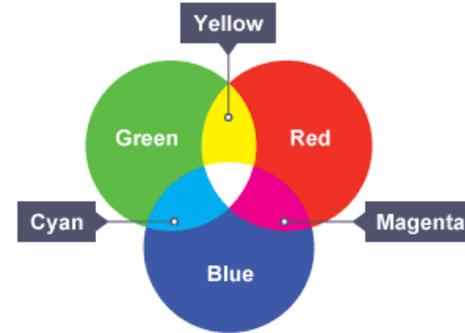


23.

24. **White light** is made of all the colours of the light spectrum.

25. The **primary colours** of light are red, blue and green.

26. The **secondary colours** of light are cyan, magenta and yellow.

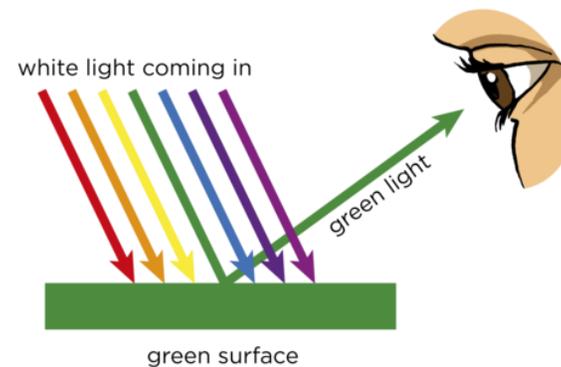


27.

28. Colour filters work by **absorbing** certain wavelengths (and colour) and **transmitting** other wavelengths (and colour).

29. The colour of an **opaque** object is determined by which wavelengths of light are more strongly reflected.

30. Wavelengths that are not reflected are absorbed.



31.

32. If all wavelengths are reflected equally the object appears white.

33. If all wavelengths are absorbed the objects appears black.

34. Objects that transmit light are either **transparent** or **translucent**.