DCP FOR CHAPTER-13

LIGHT: REFLECTION AND REFRACTION

Number of period	Sub-Topics
1	Introduction, Light, Reflection of light, Laws of reflection, Image formed by a plane mirror, Types of spherical mirrors.
2	Terms related to spherical mirror. Rules for drawing ray diagrams. Image formation by a concave mirror.
3	Ray diagrams (Image formed by a concave and convex mirror) Uses of concave and convex mirrors.
4	Sign conventions for reflection by spherical mirrors. Mirror Formula and Magnification.
5	Problems based on Mirror formula and magnification.
6	Refraction of light. Activity based on Refraction Refraction through a glass slab.
7	Laws of Refraction. Refractive Index.
8	Lens and its types. Refraction by spherical lenses Image formation by lenses. Rules for drawing ray diagrams.
9	Ray diagrams (Image formation by spherical lenses)
10	Sign conventions for spherical lenses. Lens Formula And Magnification.
11	Numerical problems on lens formula and magnification, Power of a lens, Combination of lenses.
12	Practice and Discussion with Students- Chapter Review

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	1	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Introduction, Light, Reflection of light, Laws of reflection, Image formed by a plane mirror, Types of spherical mirrors.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, Plane mirror, Torch.		
Learning Outcome	• Students will be able to state the laws of reflection. • Students will be able to draw ray diagram to illustrate formation of image by a plane mirror. • They will be able to apply the law of reflection to predict the position of images formed by objects in front of a plane mirror. • Identify different types of mirrors.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The following points will be discussed to give an idea about light. ➢ Source of light ➢ Wave and particle nature of light. ➢ How are we able to see any object?	**For Average** ➢ How can we see different objects around us? ➢ What are the different sources of energy?	
2.Light and reflection of light	➢ Define Light. ➢ Define reflection of light. ➢ Show an activity on reflection of light. ➢ Explain different terms related to reflection of light.		
3.Laws of reflection	➢ Define the two laws of reflection. ➢ Show a video on laws of reflection.		
4. **Image formed by a plane mirror**	➢ Explain through a ray diagram; How an image is formed in a plane mirror? ➢ Explain the characteristics of image formed by a plane mirror.		

5.Types of 6.spherical mirrors	➢ What is a spherical mirror? ➢ Types of spherical mirrors 1. Concave mirror 2. Convex mirror
7.Home Assignment	➢ Define reflection. ➢ Define the terms related to reflection. Incident ray Reflected ray Normal Angle of incidence Angle of reflection ➢ The angle between a plane mirror and incident ray is 50^0. Find the angle of refraction.
8. Common Errors	➢ Arrow Mark in ray diagram.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

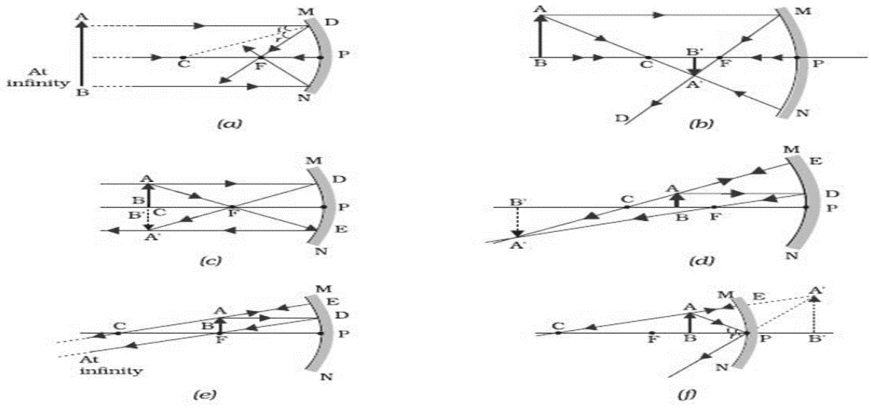
ODM Teachers' Note

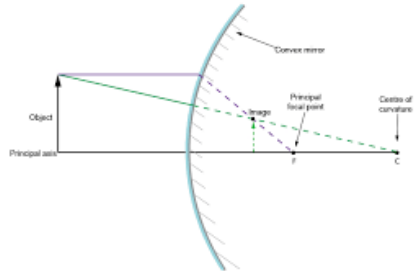
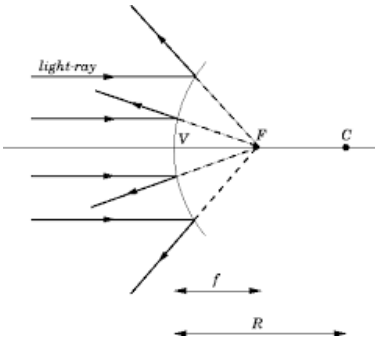
Class	X	**Subject**	PHYSICS
Prd	2	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Terms related to spherical mirror. Rules for drawing ray diagrams. Image formation by a concave mirror.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, concave mirror, convex mirror.		
Learning Outcome	• Students will be able to identify different types of mirrors. • They can draw ray diagrams and illustrate formation of image by spherical mirrors. • Differentiate between real and virtual images.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The teacher will ask questions on characteristics of image formed by a plane mirror. ➢ The teacher will show different types of mirrors and ask the students to identify them. ➢ Explain converging nature of concave mirror.	**For Average** ➢ The teacher will ask questions on characteristics of image formed by a plane mirror. ➢ The teacher will show different types of mirrors and ask the students to identify them. ➢ Explain converging nature of concave mirror.	
2.Terms related to spherical mirrors	➢ Pole ➢ Focus ➢ Focal Length ➢ Centre of curvature ➢ Radius of curvature ➢ Principal Axis		
3. Rules for drawing ray diagrams.	➢ When the ray of light is incident parallel to the principal axis. ➢ When the ray of light passes through the focus ➢ When the ray of light passes through the centre of curvature ➢ When the ray of light is incident to the pole of the mirror.		

4. **Image formed by a concave mirror.**	➢ The position and nature of the image formed when the object is placed at the following positions are discussed. 1. At Infinity 2. Beyond C 3. At C 4. Between C and F 5. At F 6. Between F and C.
5.Home Assignment	➢ Where is the image formed when the object is placeds 1. At Infinity 2. Beyond C 3. At C 4. Between C and F 5. At F 6. Between F and C of a concave mirror.
Common Error(s)	➢ Arrow marks in ray diagram. ➢ Rules for drawing ray diagrams. ➢ Nature of image formed: Real and inverted Virtual and erect

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	3	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Ray diagrams (Image formed by a concave and convex mirror) Uses of concave and convex mirrors.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, concave mirror, convex mirror.		
Learning Outcome	• Students will be able to use different types of mirrors in different cases. • They can draw ray diagrams and illustrate formation of image by spherical mirrors. • Differentiate between real and virtual images; enlarged and diminished images.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The teacher will show a video on different types of mirrors. ➢ Recapitulate the position of image formed for different positions of objects.	**For Average** ➢ The teacher will show a video on different types of mirrors. ➢ Recapitulate the position of image formed for different positions of objects.	
2. Ray diagrams (Image formed by a concave mirror)			

3. Ray diagrams (Image formed by a convex mirror)	 
4. **Uses of concave mirror.**	➢ By dentists ➢ Used in solar cooker ➢ Used as shaving mirror ➢ Used in torches or head light of vehicles.
5.Uses of convex mirror	➢ Used as rear view mirror in vehicles.
6.Home Assignment	➢ Draw the Following ray diagrams : When the object is placed 7. At Infinity 8. Beyond C 9. At C 10. Between C and F 11. At F 12. Between F and C of a concave mirror. ➢ Why is a convex mirror used as rear view mirror in vehicles?
Common Error(s)	➢ Arrow marks in ray diagram. ➢ Rules for drawing ray diagrams. ➢ Nature of image formed: Real and inverted Virtual and erect

ODM EDUCATIONAL GROUP
Changing your Tomorrow

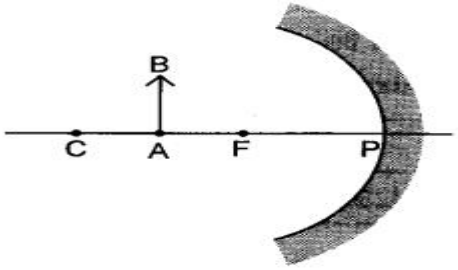
ODM Teachers' Note

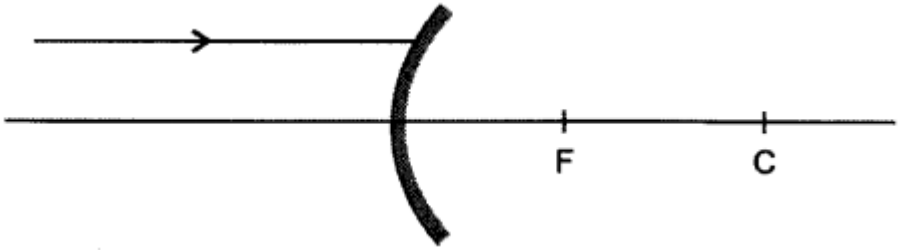
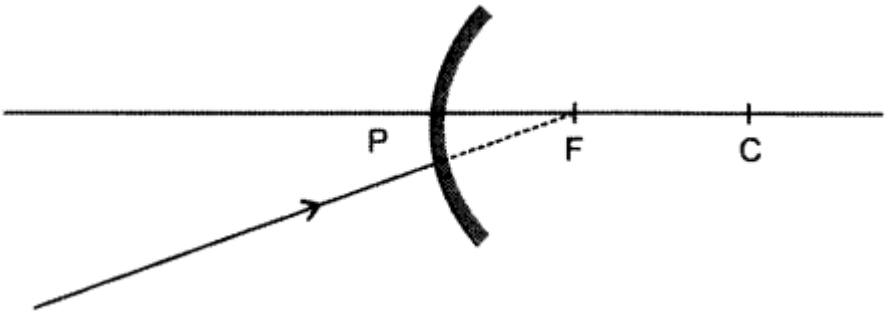
Class	X	**Subject**	PHYSICS
Prd	4	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Sign conventions for reflection by spherical mirrors. Mirror Formula and Magnification.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, concave mirror, convex mirror.		
Learning Outcome	• Students will be able to • Put proper signs before object distance and image distance. • Solve numerical problems based on mirror formula and magnification. • Predict the different positions of images for different positions of object.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The teacher will recapitulate the position of image for different positions of objects. ➢ Introduce the terms u , v, f	**For Average** ➢ Recapitulation of previous topic(Position of image for different positions of objects) ➢ Introduce the terms u , v, f	
2. Sign conventions for reflection by spherical mirrors.	➢ The teacher will show a video on sign conventions for reflection by spherical mirrors. ➢ The following points will be discussed: ➢ Sign. Of **u** ➢ Sign of **v** for real and inverted image; virtual and erect image. ➢ Sign. Of **f** for concave and convex mirror.		
3. Mirror Formula And magnification	➢ Relationship between f and R: R = f/2. ➢ 1/f = 1/u + 1/v (Mirror formula) ➢ m = - v/u.(Magnification) ➢ The nature of image formed from the sign of m is to be discussed.		
4. **Numerical problems based on**	➢ A concave mirror produces three times magnified real image of object placed at 10cm in front of it. Where is the image located?		

mirror formula and magnification.	➢ Find the focal length of a convex mirror whose radius of curvature is 32 cm. ➢ The magnification produced by a spherical mirror is -3. List four information's obtained from this statement
6.Home Assignment	➢ An object 1cm high produces a real image 1.5 cm high when placed at a distance of 15 cm from a concave mirror. Calculate the position of the image and the magnification.
Common Error(s)	➢ Sign conventions (Sign of u, v and f)

ODM EDUCATIONAL GROUP Changing your Tomorrow

ODM Teachers' Note

Class	X		**Subject**	PHYSICS
Prd	5	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION	
Sub-Concepts	Problems based on Mirror formula and magnification.			
Teaching Aid To be used	Smart Class, PowerPoint presentation			
Learning Outcome	• Students will be able to • Solve numerical problems based on mirror formula and magnification. • Predict the different positions of images for different positions of object.			
Sl. No	**Step Wise (What to be done)**			
1. **Introduction**	**For Achievers** ➢ The teacher will recapitulate the position of image for different positions of objects. ➢ Sign. Conventions ➢ Nature of image from magnification.		**For Average** ➢ Recapitulation of previous topic(Position of image for different positions of objects) ➢ Sign. Conventions ➢ Nature of image from magnification.	
2. Mirror Formula And magnification	Recapitulate the following points: ➢ Relationship between f and R: R = f/2. ➢ 1/f = 1/u + 1/v (Mirror formula) ➢ m = - v/u.(Magnification) ➢ The nature of image formed from the sign of m is to be discussed.			
3.Problems based on Mirror Formula And magnification	➢ **Draw the following diagram in your answer book and show the formation of image of the object AB with the help of suitable rays.**  ➢			

4. **Numerical problems based on mirror formula and magnification.**	➢ An object 2 cm in size is placed 30 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image? What will be the nature and the size of the image formed? Draw a ray diagram to show the formation of the image in this case. ➢ It is desired to obtain an erect image of an object, using a concave mirror of focal length 20 cm. (i) What should be the range of distance of the object from the mirror? (ii) Will the image be bigger or smaller than the object? (iii) Draw a ray diagram to show the image formation in this case.
6.Home Assignment	➢ Redraw the diagram given below in your answer book and show the direction of the light ray after reflection from the mirror.  ➢ Redraw the diagram given below in your answer book and show the direction of the light ray after reflection from the mirror. 
Common Error(s)	➢ Sign conventions (Sign of u, v and f) ➢ Arrow marks while drawing ray diagrams. ➢ Calculation errors ➢ In many answers, no unit is written.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	6	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Refraction of light. Activity based on Refraction Refraction through a glass slab.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, glass slab, pins		
Learning Outcome	• Students will be able to • Explain the cause of refraction • Relate direction in which light bends(towards the normal or away from the normal) • Explain the concept of lateral displacement.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The teacher will recapitulate the concept of reflection. ➢ Show an activity (bending of a pencil when put in a glass of water) ➢ Show a video on refraction	**For Average** ➢ The teacher will recapitulate the concept of reflection. ➢ Show an activity (bending of a pencil when put in a glass of water) ➢ Show a video on refraction	
2. Refraction of light.	➢ Define refraction. ➢ Explain the cause of refraction.		
3. Activity based on Refraction(through a glass slab)	➢ A video will be shown on the following activities. 1. When light ray travels from rarer to denser medium 2. When light ray travels from denser to rarer medium. 3. When light ray travels normally, to the glass slab.		
4. **Class Activity on**	➢ A video will be shown on the refraction through glass slab		

refraction through a glass slab	,Group wise all children will do this activity to find 1. angle of refraction 2. angle of emergence 3. Show that angle of incidence is equal to angle of emergence. 4. Define lateral displacement.
6.Home Assignment	1. Draw a ray diagram showing refraction of light through a glass slab. 2. Label the incident ray, reflected ray, angle of incidence, angle of refraction, angle of emergence.
Common Error(s)	➢ When light ray travels from denser to rarer medium, it moves away from the normal. ➢ When light ray travels from rarer to denser medium, it moves towards the normal.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	7	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Laws of Refraction. Refractive Index.		
Teaching Aid To be used	Smart Class, PowerPoint presentation		
Learning Outcome	Students will be able to • State the laws of refraction. • Explain about relative speed of light in different media. • Solve problems related to refractive index.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ The teacher will recapitulate the concept of refraction. ➢ Ask some questions related to previous topic: ➢ Define refraction. ➢ What is the cause of refraction?	**For Average** ➢ The teacher will recapitulate the concept of refraction. ➢ Ask some questions related to previous topic: ➢ Define refraction. ➢ What is the cause of refraction?	
2. Laws of Refraction of light.	➢ State the two laws of refraction. First Law Snell's Law		
3. Refractive Index	➢ Define Refractive index. ➢ Concept of Optically rarer medium and optically denser medium. ➢ Refractive index in terms of speed of light. ➢ Absolute refractive index.		
4. **Numerical problems based on refractive**	1. Light enters from air to glass having refractive index 1.50. What is the speed of light in glass? The speed of light in vacuum is 3×10^8 ms^{-1}. 2. The angle of incidence in medium A is 60^0 and the angle of refraction in		

index.	medium B is45^0.Find the refractive index of the medium B with respect to medium A. 3. Given refractive index of glass for light going from air to glass is 3/2. Find the refractive index of air for light going from glass to air.
6.Home Assignment	1. The absolute refractive index if glass and water are 4/3 and 3/2, respectively. If the speed of light in glass is 2 x 10^8 m/s, calculate the speed of light in ➢ Vacuum ➢ Water 2. The refractive index of glass is 1.54 and the speed of light in air is 3x10 m/s. Calculate the speed of light in water?
Common Error(s)	➢ Calculation errors ➢ Refractive index is a constant having no unit.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

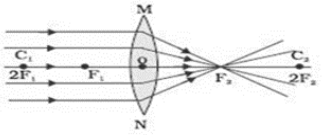
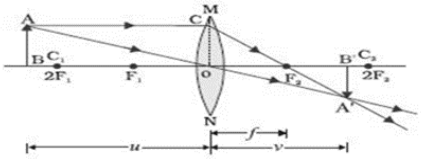
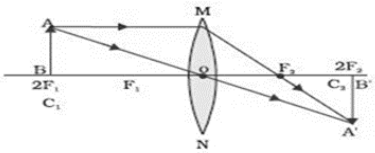
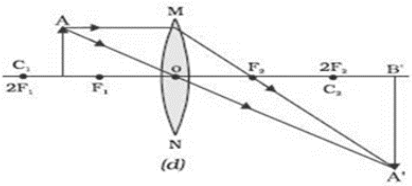
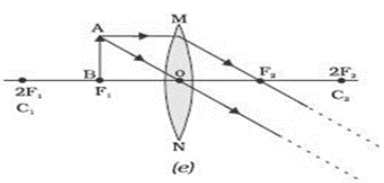
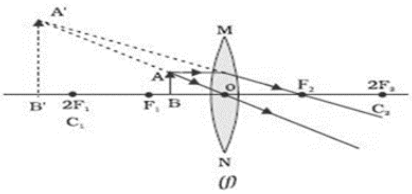
ODM Teachers' Note

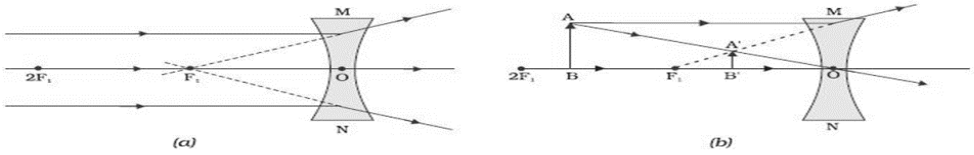
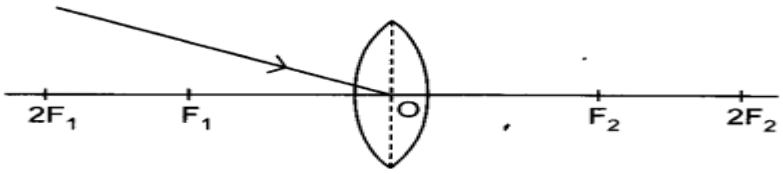
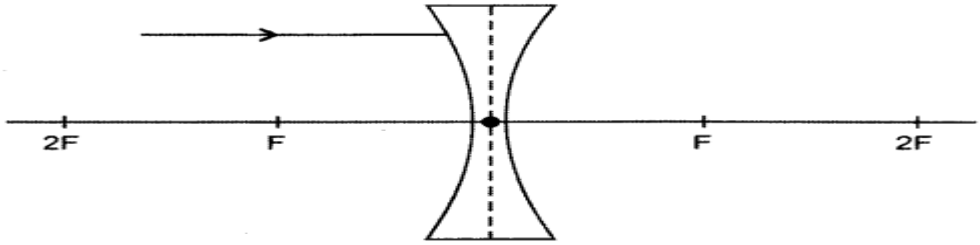
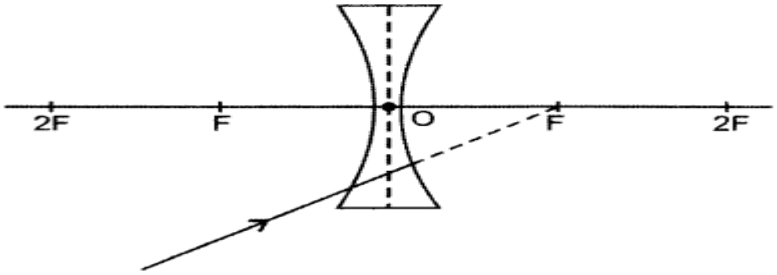
Class	X	**Subject**	PHYSICS
Prd	8	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Lens and its types. Refraction by spherical lenses Image formation by lenses. Rules for drawing ray diagrams.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, Spherical lenses.		
Learning Outcome	Students will be able to • Identify different types of lenses. • State the rules for drawing ray diagrams. • Draw ray diagrams showing formation of image by spherical lenses. • State the nature of image formed by spherical lenses.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ Recapitulate the previous topic by asking the following questions: ➢ Define refractive index. ➢ The refractive index of diamond is 2.43. What does it mean? ➢ What will happen if a ray of light passes through a lens?	**For Average** ➢ Recapitulate the previous topic by asking the following questions: ➢ Define refractive index. ➢ The refractive index of diamond is 2.43. What does it mean? ➢ What will happen if a ray of light passes through a lens?	
2.Lens and its types.	➢ Define a lens. ➢ Types of lens: 1. Concave lens 2. Convex lens. ➢ Explain why concave lens is called as a diverging lens and convex lens is called as a converging lens.		

3. Refraction by spherical lenses	➢ Explain why concave lens is called as a diverging lens and convex lens is called as a converging lens. ➢ Show the different parts of spherical lenses ➢ Optic centre ➢ Focus ➢ Radius of curvature
4. Rules for drawing ray diagrams.	➢ Rule 1: If the incident ray is parallel to the principal axis, then the refracted ray will pass through the principal focus. ➢ Rule 2. If the incident ray passes through the focus, then the refracted ray will be parallel to the principal axis. ➢ Rule 3. If the incident ray passes through the Optic Centre then it goes straight. ➢ The teacher will show a video to demonstrate the rules for drawing ray diagrams.
5. **Image formation by lenses.**	The position and nature of image formed by different lenses are discussed. ➢ Object is at infinity ➢ Object beyond 2f ➢ Object at2f ➢ Object between 2f and f ➢ Object at f ➢ Object between f and O
6.Home Assignment	1. Write the position and nature of the image formed when the object is placed ➢ At2f ➢ Between f and o ➢ At f. 2. Define the following terms. ➢ Focal length ➢ Optic centre
Common Error(s)	Nature of image formed.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X		**Subject**	PHYSICS	
Prd	9	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION		
Sub-Concepts	Ray diagrams (Image formation by spherical lenses)				
Teaching Aid To be used	Smart Class, PowerPoint presentation, Spherical lenses.				
Learning Outcome	Students will be able to • Predict the position of image for different positions of objects. • Draw the ray diagrams. • Solve numerical based on it. • Trace the path of light • Recognise and distinguish between correct and incorrect ray diagrams.				
Sl. No	**Step Wise (What to be done)**				
1. **Introduction**	**For Achievers** ➢ Recapitulate the previous topic on rules for drawing ray diagrams, positions of image for different positions of objects.			**For Average** ➢ Recapitulate the previous topic on rules for drawing ray diagrams, positions of image for different positions of objects	
2. Ray diagrams (Image formation by spherical lenses)	 (a)  (b)  (c)  (d)  (e)  (f)				

3.	
4.	 Redraw the above ray diagram. ➢ Redraw the diagram given below in your answer book and show the direction of the light ray after refraction from the lens. 
6.Home Assignment	➢ Redraw the figure. 
Common Error(s)	➢ Arrow marks in ray diagrams ➢ Rules for drawing ray diagrams.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	10	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Sign conventions for spherical lenses. Lens Formula And Magnification.		
Teaching Aid To be used	Smart Class, PowerPoint presentation, Spherical lenses.		
Learning Outcome	Students will be able to • State the sign of u ,v and f • Apply lens formula to solve problems. • State the nature of an image from magnification. • Find out magnification from u and v as well as height of image and height of object.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ Recap the ray diagrams and predict the different positions of images for different positions of objects.	**For Average** ➢ Recap the ray diagrams and predict the different positions of images for different positions of objects.	
2. Sign conventions for spherical lenses.	➢ State the sign. Conventions for spherical lenses. ➢ All distance are measured from the optical centre of the **lens**. ➢ The distance measured in the same direction as that of incident light are taken as positive and the distance measured against the direction of incident light are taken as negative.		
3. Lens Formula	➢ $1/f = 1/v - 1/u$ ➢ Where u: Object distance ➢ V: image distance ➢ F: focal length.		
4. Magnification.	➢ Define magnification. ➢ State the formula: $m = v/u$ or h^1/h ➢ Solve numerical problems based on magnification and lens formula.		

	➢ An object 5 cm in length is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Determine the position, nature and size of the image formed. ➢ A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object from it? Draw the ray diagram. ➢ A convex lens of focal length 10 cm is placed at a distance of 12 cm from a wall. How far from the lens should an object be placed so as to form its real image on the wall?
6.Home Assignment	➢ If an object of 7 cm height is placed at a distance of 12 cm from a convex lens of focal length 8 cm, find the position, nature and height of the image. ➢ An object 4 cm high is placed at a distance of 10cm from a convex lens of focal length 20cm. Find the position, nature and size of the image. ➢ A small object is so placed in front of a convex lens of 5 cm focal length that a virtual image is formed at a distance of 25 cm. Find the magnification.
Common Error(s)	➢ Calculation errors

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X		**Subject**	PHYSICS
Prd	11	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION	
Sub-Concepts	Numerical problems on lens formula and magnification, Power of a lens, Combination of lenses.			
Teaching Aid To be used	Smart Class, PowerPoint presentation, Spherical lenses spectacles.			
Learning Outcome	Students will be able to • Solve numerical problems based on lens formula and magnification. • Define power of a lens. • Find out power of combination of lenses.			
Sl. No	**Step Wise (What to be done)**			
1. **Introduction**	**For Achievers** ➢ Recap the previous topic: lens formula and magnification. From equation ① & ② $m = \frac{h^1}{h} = \frac{v}{u}$ If magnitude of $m > 1$ Image is magnified $m = 1$ Image is of same size $m < 1$ Image is deminished ➢			**For Average** ➢ Same
2. Power of a lens, Power of a lens, Combination of lenses.	➢ Define power of a lens: The ability of a lens to converge or diverge light rays is called power. ➢ P = 1/f. ➢ P = 100/ f in cm. ➢ Power of combination of lenses: $P = P_1 + P_2 + \ldots\ldots$			
3. Numerical problems on lens formula and magnification	➢ Find the position and nature of the image of an object 5 cm high and 10 cm in front of a convex lens of focal length 6 cm. ➢ Calculate the focal length of a convex lens, which produces a virtual image at a distance of 50 cm of an object placed 20 cm in front of it. ➢ What is the nature of the image formed by a convex lens if the			

	magnification produced by a convex lens is +3? ➢ What is the nature of the image formed by a convex lens if the magnification produced by a convex lens is –0.5?
4. **Numerical problems based on power of a lens.**	Q.1. A concave lens produces an image 20 cm from the lens of an object placed 30 cm from the lens. Calculate the power of the lens. Q.**2.** A convex lens is of focal length 10 cm. What is its power? Q.**3.** A person having a myopia eye uses a concave lens of focal length 50 cm. What is the power of the lens? Q.**4.** A thin lens has a focal length of –25 cm. What is the power of the lens and what is its nature? Q.**5.** A lens has a power of –2.5 D. What is the focal length and nature of the lens? **6.**Find the power of a concave lens of focal length 2 m.
6.Home Assignment	Q.6**.** A convex lens forms a real and inverted image of needle at a distance of 50 cm from the lens. If the image is of the same size as the needle, where is the needle placed in front of the lens? Also, find the power of the lens. Q.7**.** Two thin lenses of power +3.5 D and –2.5 D are placed in contact. Find the power and focal length of the lens combination. Q.8**.** A doctor has prescribed a corrective lens of power –1.5 D. Find the focal length of the lens. Is the prescribed lens is diverging or converging?
Common Error(s)	➢ Calculation errors.

ODM EDUCATIONAL GROUP
Changing your Tomorrow

ODM Teachers' Note

Class	X	**Subject**	PHYSICS
Prd	12	**Chapter-13**	LIGHT REFLECTIONAND REFRACTION
Sub-Concepts	Practice and Discussion with Students- Chapter Review		
Teaching Aid To be used	Smart Class, PowerPoint presentation, Spherical lenses.		
Learning Outcome	Students will be able to • Solve numerical problems on spherical mirrors and lenses. • State the nature of image from magnification. • Solve numerical on power of a lens.		
Sl. No	**Step Wise (What to be done)**		
1. **Introduction**	**For Achievers** ➢ Recap all formulae from the chapter like: ➢ Mirror formula ➢ Lens Formula ➢ Magnification(For lens as well as mirror) ➢ Power of a lens ➢ Power of combination of lenses.	**For Average** ➢ Recap all formulae from the chapter like: ➢ Mirror formula ➢ Lens Formula ➢ Magnification(For lens as well as mirror) ➢ Power of a lens ➢ Power of combination of lenses.	
2.	➢ Find the focal length of a convex mirror of radius of curvature 1 m ➢ Focal length of a convex mirror is 50 cm. What is its radius of curvature? ➢ Radius of curvature of a concave mirror is 25 cm. What is its focal length?		
3.	An object 4 cm in size is placed at a distance of 25 cm from a concave mirror of focal length 15 cm. Find the position, nature and height of the image. Q.7. A converging mirror forms a real image of height 4 cm, of an object of height 1 cm placed 20 cm away from the mirror. Calculate the image		

	distance. What is the focal length of the mirror?
6.Home Assignment	1. A doctor has prescribed corrective lens of power + 1.5 D. Find the focal length of the lens. Is the prescribed lens diverging or converging? 2. Find the focal length of a lens of power -2 D. What type of lens is this? 3. Define 1 D of the power of lens. 4. A convergent lens of power 8 D is combined with a divergent lens of power -10 D. Calculate a) Power of the combination. b) focal length of the combination
Common Error(s)	➢ Calculation errors ➢ Refractive index is a constant having no unit.