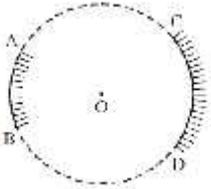


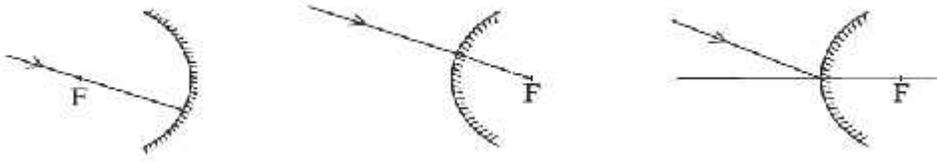


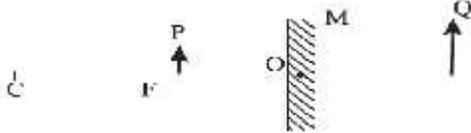
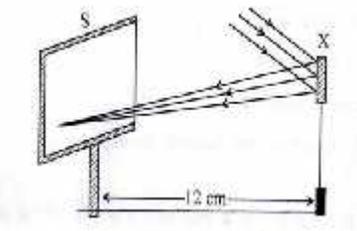
INDIAN SCHOOL DARSAIT
DEPARTMENT OF SCIENCE



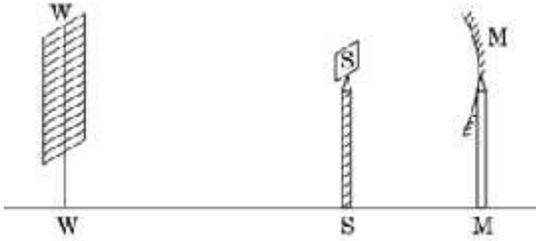
Subject : Physics	Topic : <u>LIGHT- REFLECTION</u>	Date of Worksheet : 3.5.17
Resource Person: Susan Anil		Worksheet #1
Name of the Student : _____	Class & Division : X	Roll Number : ____

1.	AB and CD, two spherical mirrors, form parts of a hollow spherical ball with its centre at O as shown in the diagram. If arc AB = 1/2 arc CD, what is the ratio of their focal lengths? State which of the two mirrors will always form virtual image of an object placed in front of it and why? 	2
2.	“The magnification produced by a spherical mirror is -3.” List four informations you obtain from this statement about the mirror/image.	2
3.	Name the type of mirrors used in the design of solar furnaces. Explain how high temperature is achieved by this device.	2
4.	State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the two images.	2
5.	List four characteristics of the images formed by plane mirrors.	2
6.	The image of an object formed by a mirror is real, inverted and is of magnification -1. If the image is at a distance of 40cm from the mirror, where is the object placed? Where would the image be if the object is moved 20cm towards the mirror? State the reason and also draw ray diagram for the new position of the object to justify your answer?	3
7.	To construct a ray diagram we use two rays of light which are so chosen that it is easy to determine their directions after reflection from the mirror. Choose these two rays and state the path of these rays after reflection from a concave mirror. Use these two rays to find the nature and position of the image of an object placed at a distance of 15cm from a concave mirror of focal length 10cm.	3

8.	<p>Draw the following diagram, in which a ray of light is incident on a concave/convex mirror, on your answer sheet. Show the path of this ray, after reflection, in each case.</p> 	3
9.	<p>An object 5cm height is placed at a distance of 12cm in front of a concave mirror it forms a real image 4 times larger than the image. Calculate the distance of the image from the mirror?</p>	3
10.	<p>Radius of curvature of a convex mirror used on a moving automobile is 2m. A truck is coming behind it at a constant distance of 3m. Calculate the position, size, nature of the image formed?</p>	3
11.	<p>(a) An object is placed at 20 cm in front of a convex mirror of focal length 10 cm. Find the image distance and magnification.</p> <p>(b) A convex mirror of focal length 20 cm forms image of magnification $\frac{3}{5}$ for one position of the object. The object is shifted by $\frac{16}{3}$cm towards the mirror. By what distance and what direction the image will move?</p>	3
12.	<p>A dentist mirror (concave) has a radius of curvature of 3 cm. How far must it be placed from a small dental cavity to give virtual image of cavity that is magnified 5 times?</p>	3
13.	<p>If the image formed by a mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a ray diagram to justify your answer. Where and why do we generally use this type of mirror?</p>	3
14.	<p>(a) Define the following terms in the context of spherical mirrors :</p> <p>(i) Pole</p> <p>(ii) Centre of curvature</p> <p>(iii) Principal axis</p> <p>(iv) Principal focus</p> <p>(b) Draw ray diagrams to show the principal focus of a :</p> <p>(i) Concave mirror</p> <p>(ii) Convex mirror</p> <p>(c) Consider the following diagram in which M is a mirror and P is an object and Q is its magnified image formed by the mirror. State the type of the mirror M and one characteristic property of the image Q.</p>	5

		
15.	<p>Suppose you have three concave mirrors A, B and C of focal lengths 10 cm, 15 cm and 20 cm. For each concave mirror you perform the experiment of image formation for three values of object distance of 10 cm, 20 cm and 30 cm. Giving reason answer the following :</p> <p>(a) For the three object distances, identify the mirror/mirrors which will form an image of magnification – 1.</p> <p>(b) Out of the three mirrors identify the mirror which would be preferred to be used for shaving purposes/makeup.</p> <p>(c) For the mirror B draw ray diagram for image formation for object distances 10 cm and 20 cm.</p>	5
16.	<p>It is desired to obtain an erect image of an object, using concave mirror of focal length of 12cm.</p> <p>(i) What should be the range of distance of an object in front of the mirror?</p> <p>(ii) Will the image be smaller or larger than the object? Draw ray diagram to show the formation of image in this case.</p> <p>(iii) Where will the image of this object be, if it is placed 24cm in front of the mirror? Draw ray diagram for this situation also to justify your answer. Show the positions of pole, principal focus and the centre of curvature in the above ray diagrams.</p>	5
Section B		
17.	<p>Study the following diagram and identify the device 'X':</p>  <p>The device X is</p>	
18.	<p>To determine the approximate value of the focal length of a given concave mirror, you focus the image of a distant object formed by the mirror on a screen. The image obtained on the screen, as compared to the object is always-----</p>	

19. A student obtains a sharp image of the distant window (W) of the school laboratory on the screen (S) using the given concave mirror (M) to determine its focal length. Which of the following distances should he measure to get the focal length of the mirror?



20. A student obtained a sharp image of a candle flame placed at the distant end of the laboratory table on a screen using a concave mirror to determine its focal length. The teacher suggested him to focus a distant building about 1 km far from the laboratory, for getting more correct value of the focal length. In order to focus the distant building on the same screen the student should slightly move the -----
