Chapter

19 Mirror & Water Images

Mirror Images

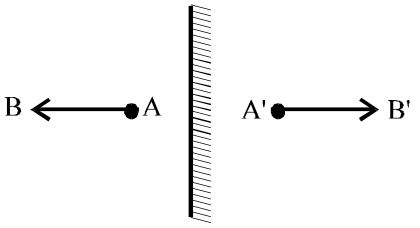
INTRODUCTION

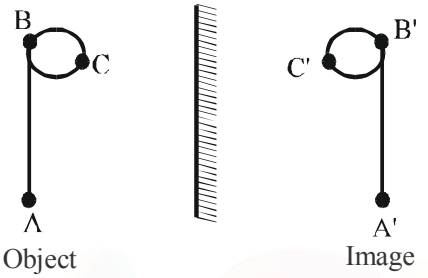
In this category, questions are based on the criteria that a few figures are given and you have to find out which one is the exact image of the given figure in a mirror placed in front of it. This image formation is based on the principle of 'lateral inversion' which implies that size of the image is equal to the size of the object but both sides are interchanged. The left portion of the object is seen on the right side and right portion of the object is seen on the left side. For example, mirror image of ABC = ↄꓭA

Note : There are '11' letters in English Alphabet which have identical mirror images: A, H, I, M, O, T, U, V, W, X, Y.

Characteristics of Reflection by plane mirror

1. Perpendicular distance of object from mirror = Perpendicular distance of image from mirror.
2. The image is laterally inverted.





3. The line joining the object point with its image is normal to the reflecting surface.
4. The size of the image is the same as that of the object.

I. Mirror Images of Capital Letters

A	A	N	И
B	ꓭ	O	O
C	Ↄ	P	ꟼ
D	ᗡ	Q	Ọ
E	Ǝ	R	Я
F	ꟻ	S	ƨ
G	⅁	T	T
H	H	U	U
I	I	V	V
J	ſ	W	W
K	ꓘ	X	X
L	⅂	Y	Y
M	M	Z	Z

II. Mirror Images of Small Letters

a	ɐ	n	ɯ
b	d	o	o
c	ɔ	p	q
d	b	q	p
e	ɘ	r	ɹ
f	ʇ	s	ƨ
g	ǫ	t	ɟ
h	ɥ	u	ɯ
i	i	v	v
j	ɾ	w	w
k	ʞ	x	x
l	l	y	ʏ
m	ɯ	z	z

III. Mirror Images of Numbers

0	0	6	9
1	ı	7	∠
2	ƨ	8	8
3	Ɛ	9	6
4	ㄣ	10	0ı
5	ƨ		

IV. Mirror Images of Clock:

There are certain questions in which the position of the hour-hand and the minute-hand of a clock as seen in a mirror are given. On the basis of the time indicated by the mirror-image of the clock we have to detect the actual time in the clock. In the solution of such questions we use the fact that if an object A is the mirror-image of another object B then B is the mirror-image of A.

❑ Shortcut Approach

Whenever you have to solve a mirror image question, imagine a mirror placed in front of the object and then try to find its inverted image. The portion of the object that is near the mirror will now be the portion of the image near to the mirror in the inverted form.

EXAMPLE 1.

By looking in a mirror, it appears that it is 6 : 30 in the clock. What is the real time ?

Sol. As,

Time = 6 : 30

(Fig A)

Time = 5 : 30

(Fig B)

Clearly, fig (A) shows the time (6 : 30) in the clock as it appears in a mirror. Then its mirror-image i.e. Fig (B) shows the actual time in the clock i.e. 5 : 30. You can solve it quickly if you remember that the sum of actual time and image time is always 12 hours.

Water Images

The reflection of an object as seen in water is called its water image. It is the inverted image obtained by turning the object upside down.

Water-images of Capital Letters

Letters	A	B	C	D	E	F	G	H	I	J	K	L	M
Water-image	∀	B	Ɔ	D	Ǝ	Ⅎ	⅁	H	I	ſ	⋊	⅂	W
Letters	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Water-image	И	O	Ь	Ò	Я	Ƨ	⊥	∩	Λ	M	X	⅄	Z

Water-images of Small Letters

Letters	a	b	c	d	e	f	g	h	i	j	k	l	m
Water-image	ɐ	q	ɔ	p	ǝ	ɟ	ƃ	ɥ	ı	ɾ	ʞ	l	ɯ
Letters	n	o	p	q	r	s	t	u	v	w	x	y	z
Water-image	u	o	b	d	ɹ	s	ʇ	n	ʌ	ʍ	x	ʎ	z

Water-images of Numbers

Letters	0	1	2	3	4	5	6	7	8	9
Water-image	0	I	Ƨ	Ɛ	ᔭ	Ƨ	9	L	8	6

Note :

1. The letters whose water-images are identical to the letter itself are : C, D, E, H, I, K, O, X
2. Certain words which have water-images identical to the word itself are : KICK, KID, CHIDE, HIKE, CODE, CHICK

❑ *Shortcut Approach*

Whenever we have to analyze the water image of an object, imagine a mirror or a surface that forms an image just under the given object. The portion of the object that is near the water surface will be inverted but will be near the water surface in the image as well.

EXAMPLE 2.

Find the correct option for the water images below:

STORE
////////////// ← water surface
?

Sol. In case of water image, the water reflection will usually be formed under the object / word.

In this case, the water image of the word will be an outcome of the water images of each of the letters like, the water images of S is Ƨ, T is ⊥, O is O, R is Я and E is Ǝ. Thus, the water image of the word 'STORE' is 'Ƨ ⊥ O Я Ǝ.'

STORE
//////////
Ƨ⊥OЯƎ

❑ Shortcut Approach

(i) While solving a question, try eliminating some options and solving the questions will become easier. To eliminate options, keep in mind the pattern used in the object (given diagram whose image is to be formed) as well as the position of mirror or water such that the portion of the object near to the mirror / water will produce the same portion near the mirror / water in an inverted form.

(ii) Images are images, be it water or mirror, in both the cases an inverted image of the alphabets / numerals / clocks / any other object are formed by inverting the object. Inverting of the object solely depends upon the position of mirror or water surface w.r.t. the object.

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