Image Formed by a Plane Mirror

Stand 2 m from a mirror and your image is 4 m from you. Why a plane mirror's image is virtual, erect, the same size, as far behind as you are in front, and laterally inverted.

Name: Date: Score: ____ / 19

A. Fill in the blanks

1. The image formed by a plane mirror is always ____ and erect.

2. The image is as far ____ the mirror as the object is in front of it.

3. The size of the image in a plane mirror is ____ the size of the object.

4. Right appearing as left in a mirror is called lateral ____.

5. If you stand 2 m from a plane mirror, your image is ____ m from you.

B. True or False

6. A plane mirror's image can be caught on a screen. True / False

7. The image becomes smaller as you move away from a plane mirror. True / False

8. The image in a plane mirror is erect. True / False

9. The magnification of a plane mirror is 1. True / False

C. Assertion and reason

10. Assertion (A): The image formed by a plane mirror is virtual.
Reason (R): The reflected rays do not actually meet; their extensions meet behind the mirror.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

11. Assertion (A): The letter "R" appears as "Я" in a plane mirror.
Reason (R): A plane mirror laterally inverts the image.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

12. You stand 5 m from a plane mirror. Your distance from your image is:

(a) 5 m
(b) 2.5 m
(c) 10 m
(d) 25 m

Answer: _____

13. Which word is written laterally inverted on ambulances?

(a) POLICE
(b) FIRE
(c) AMBULANCE
(d) STOP

Answer: _____

14. The image in a plane mirror is:

(a) real and inverted
(b) virtual and erect
(c) real and erect
(d) virtual and inverted

Answer: _____

15. A person walks towards a mirror at 1 m/s. The image approaches the person at:

(a) 1 m/s
(b) 2 m/s
(c) 0.5 m/s
(d) 0 m/s

Answer: _____

E. Numerical problems

16. A candle is 30 cm in front of a plane mirror. It is moved 10 cm closer. Find the new distance between the candle and its image.

17. You stand 3 m from a mirror and step back 1 m. How far is your image from you now?

F. Short answer questions

18. Draw and explain how a plane mirror forms the image of a point object.

G. Match the columns

19. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. Virtual	(a) Upright	1 → ____
2. Erect	(b) Magnification 1	2 → ____
3. Same size	(c) Cannot be caught on a screen	3 → ____
4. Lateral inversion	(d) Right appears as left	4 → ____

Detailed solutions

1. virtual

2. behind

3. equal to

4. inversion

5. 4

6. False. It is virtual: the rays only appear to meet behind the mirror.

7. False. Its size stays the same; it only looks smaller because it is farther away.

8. True. It is upright, the same way up as the object.

9. True. Image size equals object size.

10. (a) R explains A.

11. (a) R explains A.

12. (c) 10 m. Image 5 m behind the mirror: 5 + 5.

13. (c) AMBULANCE. So it reads correctly in a rear-view mirror.

14. (b) virtual and erect. Rays appear to meet behind the mirror; it stays upright.

15. (b) 2 m/s. Both move towards the mirror, so the gap closes twice as fast.

16. New object distance = 20 cm; image 20 cm behind. **Answer: 40 cm**

17. Object distance 4 m; image 4 m behind; 4 + 4. **Answer: 8 m**

18. Two rays from the point reflect with i = r; the reflected rays diverge; extended backwards they meet behind the mirror at the virtual image, as far behind as the object is in front.

19. 1 → (c), 2 → (a), 3 → (b), 4 → (d). Each property matches its meaning.