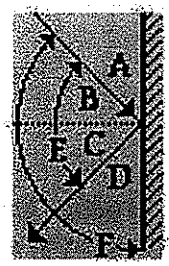
Reflection and Plane Mirrors Name:_____ 10

1 State the law of reflection in the space below.
when light reflects off a surface, the angle between the incident ray + the normal line is equal to the angle between the reflected ray + the normal line.

Consider the diagram at the right in answering the next three questions.

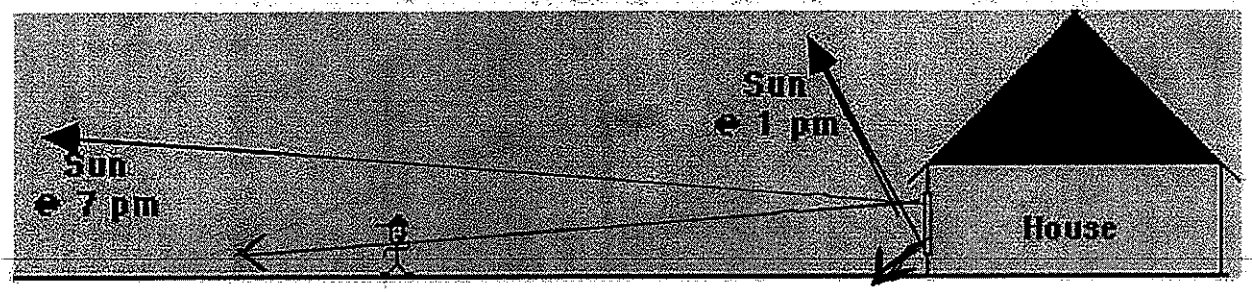



2 The angle of incidence is denoted by angle B.

3 The angle of reflection is denoted by angle C.

4 If an incident ray of light makes an angle of 35° with the mirror surface then the angle of reflection is 35°.

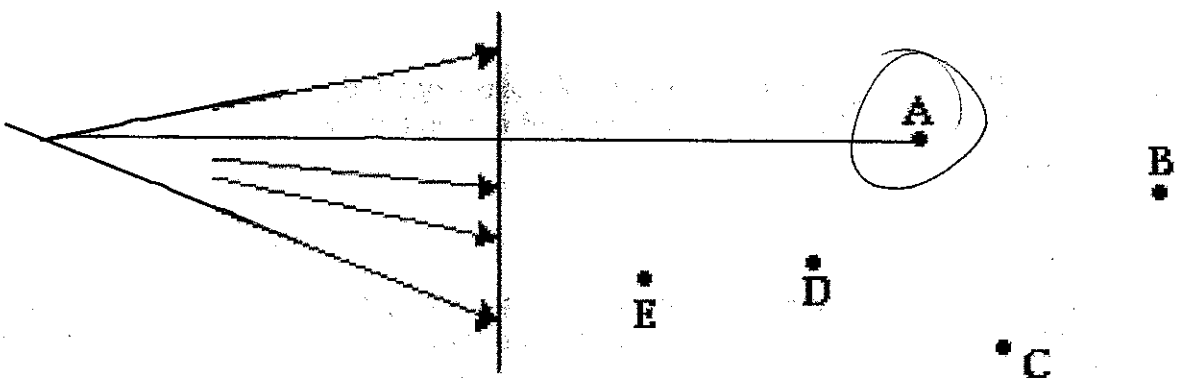
5 Why do windows of distant houses appear to reflect the sun only when rising or setting? Explain in words. Use the diagram to help, drawing appropriate light rays on the diagram.



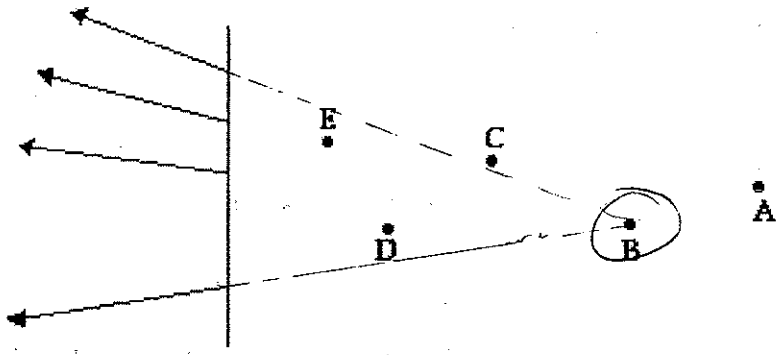

The image of an object as formed by a plane mirror is located E.
a. on the mirror surface
b. in front of the mirror surface
c. behind the mirror surface
d. any of the above, depending on the object's location.

7 Which of the following statements are true of plane mirror images? List all that apply. B + E
a. The location of an image is different for different observers.
b. Observers at different locations will sight along different lines at the same image.
c. Every image is located on the mirror surface and at the same location for different observers.
d. Every image is located on the mirror surface, but at a different location for different observers.
e. All observers (regardless of their location) will sight at the same image location.

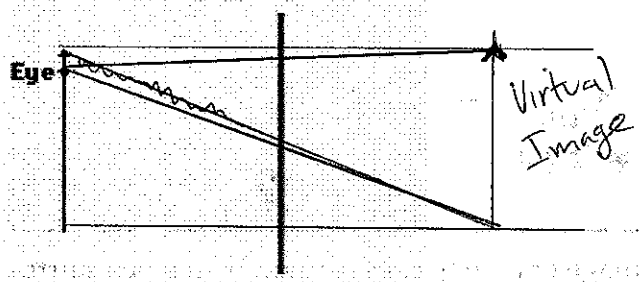
8 The diagram below depicts the path of four incident rays emerging from an object and approaching a mirror. Five lettered locations are shown on the opposite side of the mirror. Which location is representative of the image location?

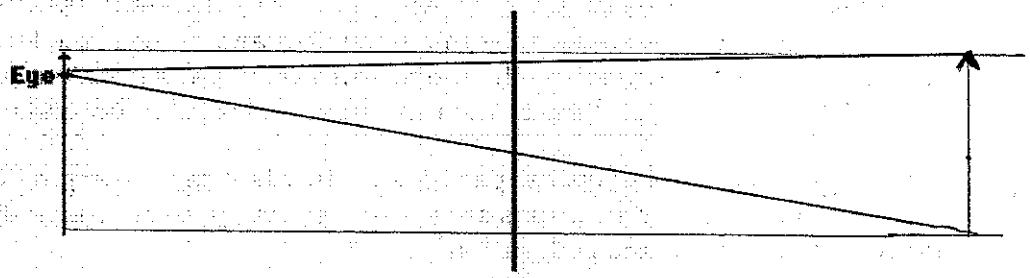


9 The diagram below depicts the path of four reflected rays that originated at the object on the left side of the mirror and have subsequently reflected from the mirror. Five lettered locations are shown on the right side of the mirror. Which location is representative of the image location?




10 Consider the mirror and the stick-person shown in the two diagrams below. The distance between the mirror and the person is different in the two diagrams. For each diagram, accurately draw and label the image of the stick-person in the appropriate position. Finally, draw lines of sight from the eyes of the stick-person to the mirror in order to indicate which portion of the mirror is needed to view the image. Use a ruler/straight-edge and be precise.




11 Compare the height of the stick-person to the <u>length of mirror needed</u> to view the stick-person. Make some measurements (from the diagram above) and record below.

| | Height of Person | Length of Mirror Needed |
|---|---|---|
| Top | 2.4cm | 1.2cm |
| Bottom | 2.4cm | 1.2cm |

12 Does the distance from the stick-person to the mirror seem to affect the amount of mirror that th person needs to view the image? No Explain and support your answer using numerical values taken from question #10 above. the ratio is 2:1 It doesn't matter where you stand.