

Chapter 10

REFLECTION AND REFRACTION

Example- 7:

A car is fitted with a convex mirror of focal length 20 cm. A second car 2 m broad and 1.6 m high is 6 m away from the first car.

(a) Find the position of the second car as seen in the mirror of the first and

(b) Find the breadth and height of the second car seen in the mirror of the first car, are respectively.

Solution:

$$(a) \frac{1}{v} + \frac{1}{-600} = \frac{1}{20} \text{ or } \frac{1}{v} = \frac{31}{600}$$

$$\text{Or } v = \frac{600}{31} \text{ cm} = 19.35 \text{ cm}.$$

$$(b) m = -\frac{v}{u} = \frac{600}{31} \times \frac{1}{-600} = \frac{1}{31}$$

$$\text{Breadth of image} = \frac{1}{31} \times 200 \text{ cm} = 6.45 \text{ cm}$$

$$\text{Height of image} = \frac{1}{31} \times 160 \text{ cm} = 5.16 \text{ cm}.$$