

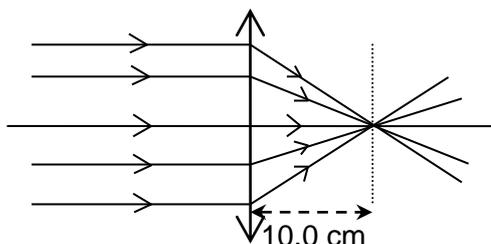


2021 Sec 4 Physics Assignment Answers
Assignment 9B Lens Formulae

Total = 15

- 1 (a) It means that rays parallel to the principal axis will meet 10.0 cm away from the centre of the lens measured along the principal axis. [1]
 [1]

diagram [1]



(i) $1/10.0 = 1/12.5 + 1/v$ [2]
 $v = 50.0 \text{ cm}$ [1]

(ii) Magnification = $h_i / h_o = v / u$

$H = 25 \times (50.0/12.5)$ [2]
 $= 100 \text{ mm}$ [1]

2 $1/f = 1/50 + (-1/150)$ [2]
 $f = 75 \text{ mm}$ [1]

3 (a) (i) real [2]
 $1/150 = 1/u + 1/3u$
 $u = 200 \text{ mm}$ [1]

(ii) virtual.

If we take u as positive (which is always the case), $v = -3u$

$1/150 = 1/u - 1/3u$ [2]
 $u = 100 \text{ mm}$ [1]

(b) 1. Move the object further from the lens ($u > 2f$ ie $u > 300\text{mm}$ to get a smaller image) [1]

2. Move the screen closer to the lens. [1]