

#419308

Topic: Optical Instruments

A student measures the thickness of a human hair by looking at it through a microscope of magnification 100. He makes 20 observations and finds that the average width of the hair in the field of view of the microscope is 3.5 mm. What is the estimate on the thickness of hair?

- A 0.035mm
- B 0.007mm
- C 3.5mm
- D None of the above

Solution

Magnification= 100.

Avg. width in Microscope =3.5 mm

So,

$$\text{Original width} = \frac{3.5 \text{ mm}}{100} = 0.035 \text{ mm}$$

#463230

Topic: Reflection at Plane Surface

Suppose you are in a dark room. Can you see objects in the rooms? Can you see objects outside the room. Explain.

Solution

We can see an object only when light rays emitted or reflected from the object reaches our eye. In a dark room, no light reaches our eye. Hence, no objects are visible. Outside the room, all objects are visible because light reflected from their surfaces reaches our eyes.

#464786

Topic: Optical Instruments

Which of the following lenses would you prefer to use while reading small letters found in a dictionary?

- A A convex lens of focal length 50 cm
- B A concave lens of focal length 50 cm
- C A convex lens of focal length 5 cm
- D A concave lens of focal length 5 cm

Solution

A convex lens is also used as a simple microscope. The object is kept between the focal length and mirror so that a virtual, erect and magnified image is formed. Smaller focal length has more power and is suitable for larger magnification. Hence, convex lens of focal length 5 cm is preferred.