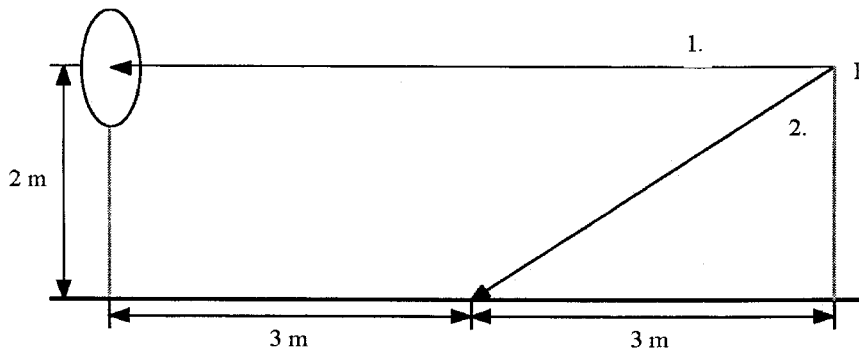


Instructions: answer all the questions.

1. CIE general colour rendering index and special indices.
2. Compare the properties of an incandescent lamp and a screw base compact fluorescent lamp (i.e one with a standard Edison base which can directly replace incandescent lamp)
3. Getting the generated light out of LEDs can present problems. Why is this, what consequences does this have, and how can this be remedied?
4. Show that the maximum luminous intensity of a diffusely radiating cylinder element is

$$I_{max} = \frac{\Phi}{\pi \cdot sr}$$

5. A diffusely radiating disc is located above a diffuse horizontal plane surface as shown in Figure 1 below. The area of the disc is $A = 0,2 \text{ m}^2$ and the maximum of its luminous intensity is $I_{max} = 100 \text{ cd}$. The reflectance of the horizontal plane is 75%. Calculate the luminances an observer at point P sees when looking at directions 1 and 2.



Kuva 1: Tehtävän 5 tilanne