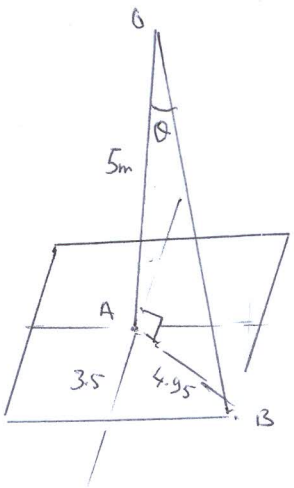
Examples.

1.



below lamp: $E_A = \frac{I}{d^2} = \frac{50}{5^2} = 2.0\ lx$

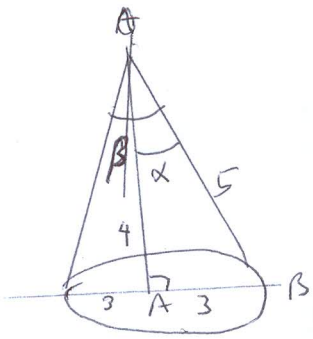
at each corner

$E_B = E_A \cos^3\theta$

$\cos\theta = \frac{5}{\sqrt{5^2 + 4.95^2}} = 0.71$

$E_B = 20 \cos^3 0.71 = 7.18\ lx$

2.



a. $E_A = \frac{I}{h^2} = \frac{500}{4^2} = 31.25\ lx$

b. $\alpha = \cos^{-1}\frac{4}{5} = 0.8$

$E_B = \frac{500}{4^2} \cos^3 0.8 = 16\ lx$.

(c). $\omega = 2\pi(1 - \cos\alpha) = 2\pi(1 - 0.7) = 0.4\pi$.

$\phi = I\omega = 500 \times 0.4\pi = 200\pi$

$A = \pi r^2 = \pi 3^2 = 9\pi$

$E_{Avg} = \phi/A = \frac{200\pi}{9\pi} = 22.2\ lx$.

3.

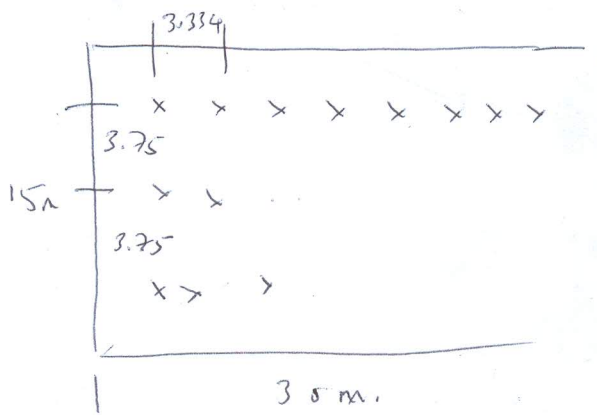
$A = 30 \times 15 = 450\ m^2$

$\text{Lumens} = \frac{450 \times 120}{0.5 \times 0.7} = 154286\ lm$.

$\text{Wattage (no-u)} = 154286 / 40 = 3780$

# of 80-w tubes $= 3780/80 = 47.25$

≈ 48.



Assume mounting height of 3m:

Space/height ratio (length) $= \frac{3.34}{3} = 1.11$

(width) $= \frac{3.75}{3} = 1.25$.

Spac