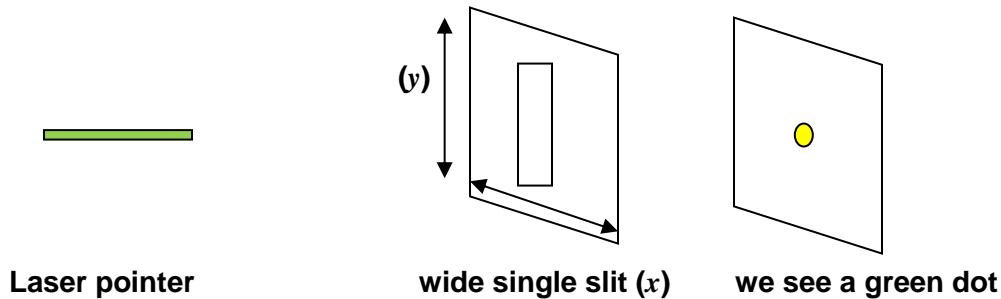
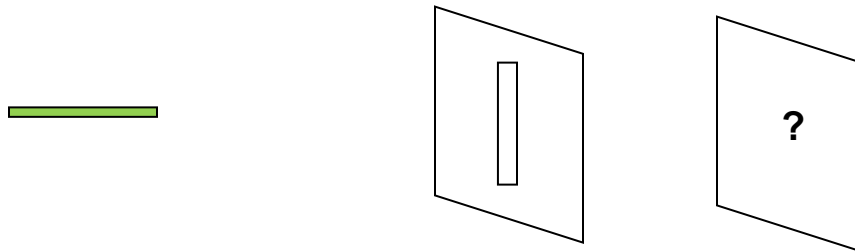


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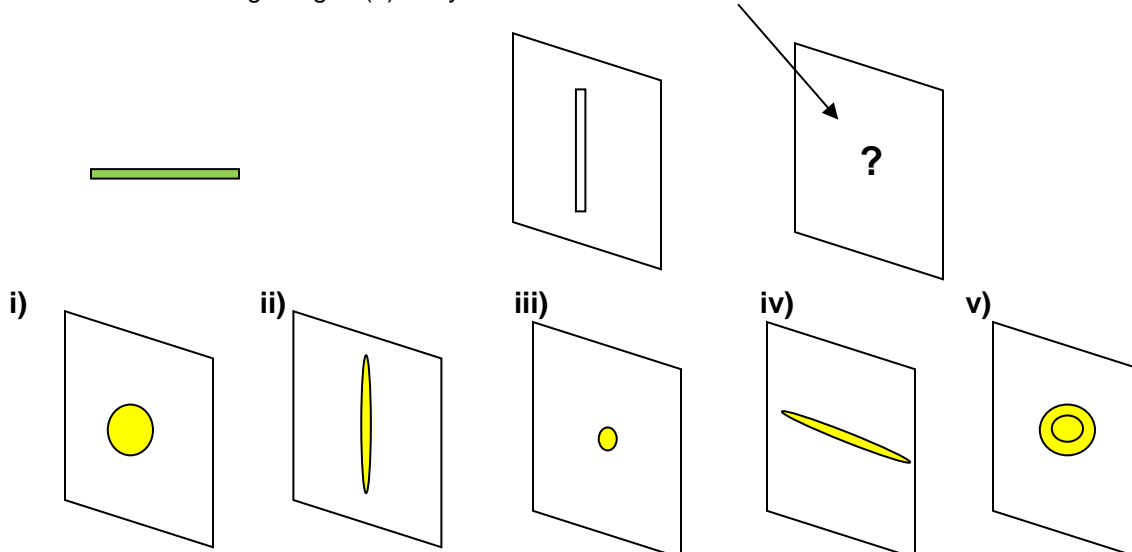
1) You are given a normal green laser pointer (used in most lectures) and a slit in the x direction (indicated by the 2 sided arrow) and a target screen as shown in the diagram below.



What do you think would happen to the dot if we make the slit narrower (in the x direction)?



And if we make the **slit even narrower** until the slit is smaller than the diameter of the laser dot, which of the following images (?) will you see on the screen?



- a) we will see images iii) and ii) respectively due to the uncertainty in both directions
 b) we will see images ii) and i) respectively due to the uncertainty in both directions
 c) we will see images iii) and iv) respectively due to the uncertainty in the x direction
 d) we will see images ii) and iv) respectively due to the uncertainty in the y direction (D)

2) Explain your answer to the previous question.

When the slit is larger or the same size as the dot, the dot will still appear. However when it gets slightly smaller, it will stretch out in the y direction. As the slit gets even smaller, Heisenberg's Uncertainty Principle will come into play. This is because as the slit gets smaller, Δx will become smaller as we are more certain of where the photons will come out from, thus Δp will be much larger, causing the light to spread out horizontally.