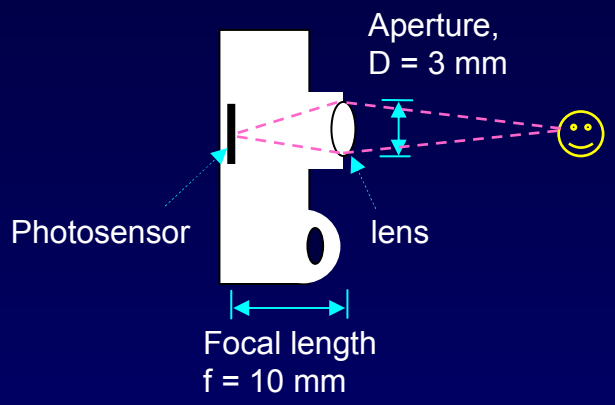
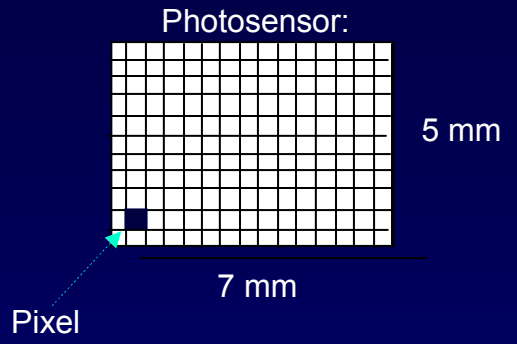
Example: Camera resolution

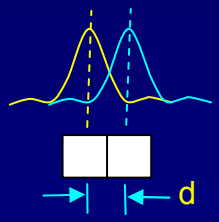
(Next week's discussion)

Digital cameras look something like this:





If the distance between adjacent pixels is less than the minimum resolvable separation due to diffraction, then diffraction limits the image quality.



The "f-number" of a lens is defined as f/D. To minimize diffraction, you want a small f-number, i.e., a large aperture*.

*This assumes a 'perfect lens'. In practice, lens aberrations limit the resolution if D is too big.