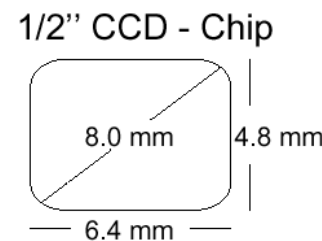


# Exercises (1/3)

- Discuss the PE-questions (and write down the answers)
- Look at the x-tra slides and see if you can find other situations where image processing is used
- Given a  $512 \times 512 \times 8\text{bit}$  image. How many different images can be made?
- We want to photograph an object, which is 1m tall and 10m away from the camera. The height of the object in the image should be 1mm.
  - What should the focal length ( $f$ ) be ?
  - (we assume that the object is in focus at the focal point, hence  $f=b$ )

## Exercises (2/3)

- Mick is 2m tall and standing 5m from a camera. The camera's focal length is 5mm.
  - A focused image of Mick is formed inside the camera. At which distance from the lens?
- How tall (in mm) will Mick be on the CCD-chip?
- How tall (in pixels) will Mick be on the CCD-chip?
  - The camera has a 1/2" CCD chip:
    - The camera image has a size of: 640x480 pixels
- What is field-of-view of the camera?



## Exercises (3/3)

- What is a CCD-chip and how does it operate?
- What is Depth-of-field (DK:dybteskarphed)?
- Given a 512 x 512 x 8bit image. How is the memory size reduced when you:
  - Decrease the grayscale resolution repeatedly by 2
  - Decrease the x-size and y-size of the image repeatedly by 2

- Show that the following is true:  $\frac{1}{g} + \frac{1}{b} = \frac{1}{f}$