Real Height of object (H_o) $= \dfrac{W_D \times H_s \times H_{IO}}{l_f \times H_I}$

Real Width of object (W_o) $= \dfrac{W_D \times W_s \times W_{IO}}{l_f \times W_I}$

where, W_D = working distance

l_f = focal length of lens.

H_I, W_I = Height and width of image respectively.

H_s, W_s = Height and width of sensor respectively.

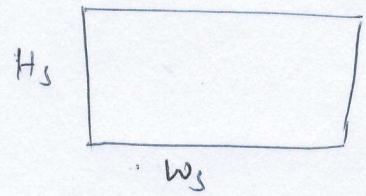
H_{IO}, W_{IO} = Height and width of object in image.

For Realsense LiDAR L515 camera,

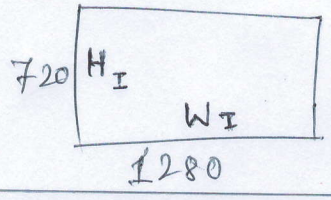
Focal length (l_f) = 1.88 mm.

sensor width (W_s) = 2.46 mm

sensor height (H_s) = 1.383 mm



for image of resolution (1280, 720),



(1) $H_o = \dfrac{W_D \times H_{IO} \times 1.383}{1.88 \times 720}$

or, $H_o = \dfrac{0.001022}{1.0217 \times 10^{-3}} \times W_D \times H_{IO}$

(2) $W_o = \dfrac{W_D \times W_{IO} \times 2.46}{1.88 \times 1280}$

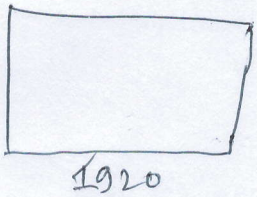
or, $W_o = 0.001022 \times W_D \times W_{IO}$

or $W_o = 1.0222 \times 10^{-3} \times W_D \times W_{IO}$

for image of resolution (1920 × 1080)

(1) $H_o = \dfrac{W_D \times H_{IO} \times 1.383}{1.88 \times 1080}$

$H_o = 6.811 \times 10^{-4} \times W_D \times H_{IO}$



2) $W_o = \dfrac{W_D \times W_{IO} \times 2.46}{1.88 \times 1920}$

$W_o = 6.811 \times 10^{-4} \times W_D \times W_{IO}$