Photographic Footprint of a Camera

variables		
xsensor	36	width of sensor in mm
ysensor	24	height of sensor in mm
focallen	125.5	focal length of lens in mm
altitude	7	height in m
VZAx	40	x-axis angle
VZAy	40	y-axis angle
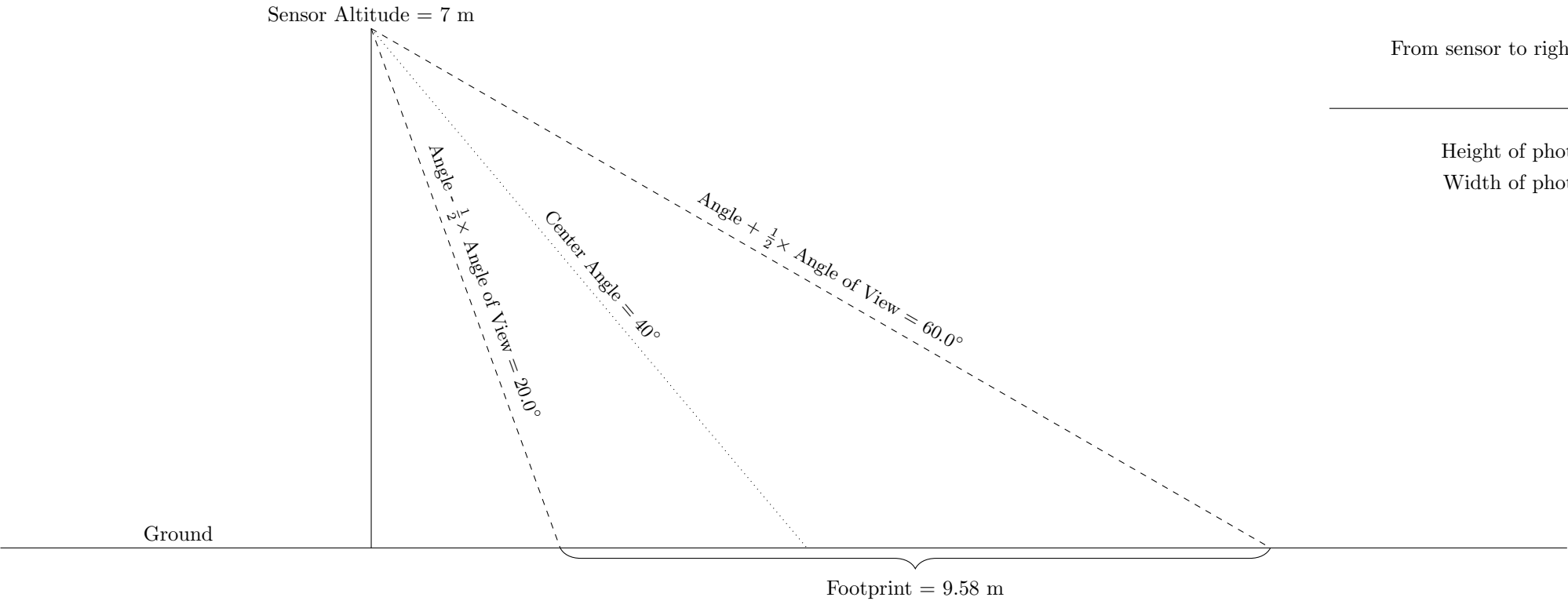
Field of view wide: $2\tan^{-1}\left(\dfrac{36}{2\times 125.5}\right) = 40.0°$

Field of view tall: $2\tan^{-1}\left(\dfrac{24}{2\times 125.5}\right) = 40.0°$

From sensor to bottom of picture: $7\times\tan\left(40 - \dfrac{1}{2}\times 40.0\right) = 2.55m$

From sensor to top of picture: $7\times\tan\left(40 + \dfrac{1}{2}\times 40.0\right) = 12.12m$

From sensor to left of picture: $7\times\tan\left(40 - \dfrac{1}{2}\times 40.0\right) = 2.55m$

From sensor to right of picture: $7\times\tan\left(40 + \dfrac{1}{2}\times 40.0\right) = 12.12m$

Height of photo footprint: $12.12 - 2.55 = 9.58m$

Width of photo footprint: $12.12 - 2.55 = 9.58m$

Sensor Altitude = 7 m

Angle $-\frac{1}{2}\times$ Angle of View = 20.0°

Center Angle = 40°

Angle $+\frac{1}{2}\times$ Angle of View = 60.0°

Ground

Footprint = 9.58 m