In Figure 1.0, we have a straight line from P1 to P2.

$$\text{Slope, } m = \frac{y2 - y1}{x2 - x1} = \frac{3.5 - 0.6}{0.5 - 0} = 5.8$$

Now,

$y = mx + c$ ---------- Eq. (1)

where c, y axis intercept = 0.6 apprx. (check datasheet for clear view)

So, we need to calculate the value of dust density/concentration of sensor based on its output voltage.

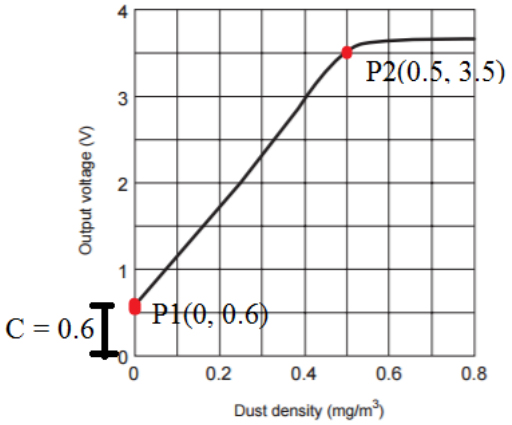

Figure 1.0: Output Voltage vs Dust Density
Image Curtesy: GP2Y1010AU datasheet

From Eq. (1), We can write

Output Voltage (V) = m * Dust Density (mg/m^3) + c

$$\text{Dust Density } (mg/m^3) = \frac{\text{Output Voltage (V)} - 0.6}{5.8}$$ ---------- Eq. (2)

Eq. (2) is valid for the Output Voltage (V) in the range of (0.6 ~ 3.5). We can also find that beyond this range, Output Voltage from sensor is almost! constant.

So, Dust Density (mg/m^3) can be calculated in the range of (0 ~ 0.5).