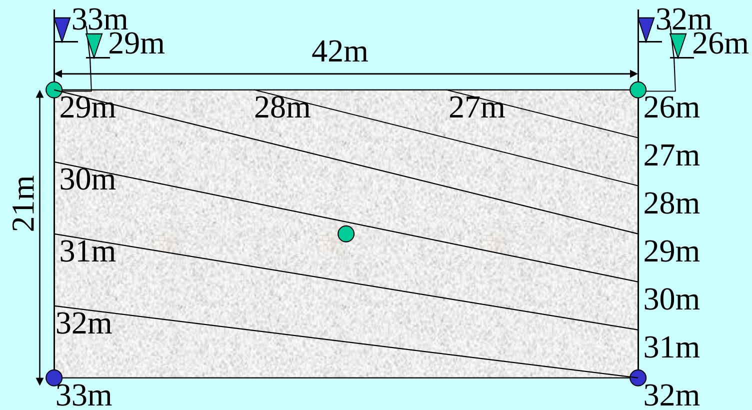
Calculate a resultant velocity at the center

now the gradient is different at top and bottom and from side to side

$Kx=1x10^{-5}$ m/s $Ky=1x10^{-6}$m/s

Assume linear variation of head

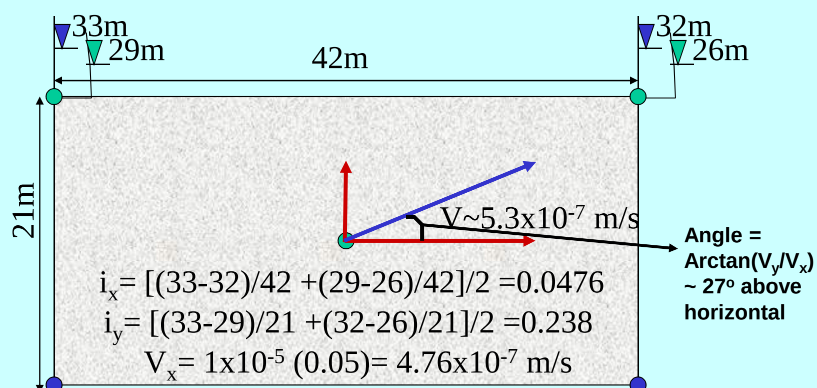


Now Calculate a resultant velocity at the center

Calculate a resultant velocity at the center

$Kx=1x10^{-5}$ m/s $Ky=1x10^{-6}$ m/s

Assume linear variation of head



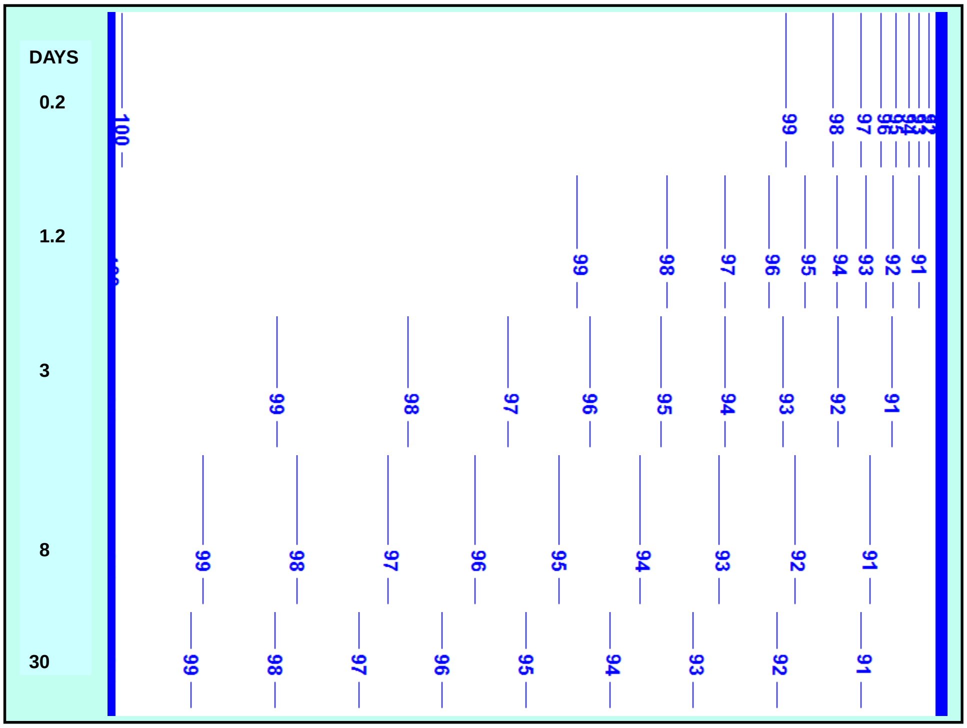
i_x= [(33-32)/42 +(29-26)/42]/2 =0.0476

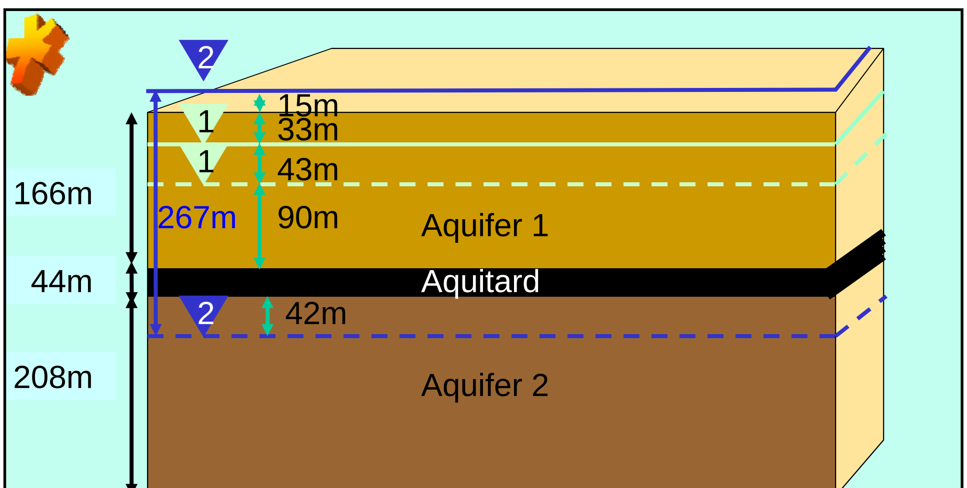
i_y= [(33-29)/21 +(32-26)/21]/2 =0.238

$V_x= 1x10^{-5}$ (0.05)= $4.76x10^{-7}$ m/s

$V_y= 1x10^{-6}$ (0.24)= $2.38x10^{-7}$ m/s

$V = \sqrt{(V_x^2 + V_y^2)}$ m/s

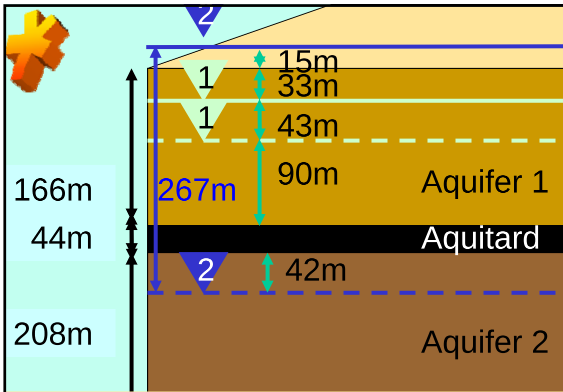




	Sy	S
Aquifer 1	0.3	4×10^{-3}
Aquitard	0.02	5×10^{-4}
Aquifer 2	0.1	6×10^{-5}

If the water level in piezometers open in aquifer 1 and 2 drop from their solid line levels to the dashed line levels over a square kilometer

How much water is released from the aquifers?



	Sy	S
Aquifer 1	0.3	4×10^{-3}
Aquitard	0.02	5×10^{-4}
Aquifer 2	0.1	6×10^{-5}

Aquifer 1 = Vol = $[\Delta h_{uncf} * SY] + [\Delta h_{uncf} \text{ (avg thickness) } S_s]$

$$= \left[43m * 0.3\right] + \left[43m * (90+(43/2))m * \frac{4\times10^{-3}}{(90+43)}\right] = \frac{12.9m^3 + 0.144\ m^3}{m^2} \sim \frac{13m^3}{m^2}$$

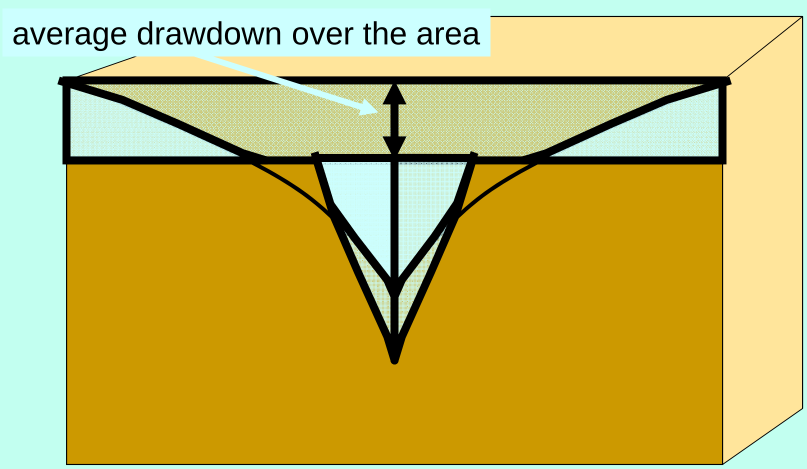
$13m^3 / m^2 \sim 13{,}000{,}000m^3/km^2 \sim$ 10,500ACFT

Aquifer 2 = Vol = $[\Delta h_{cnf} * S] + [\Delta h_{uncf} * SY] + [\Delta h_{uncf} \text{ (avg thickness) } S_s]$

$$= \left[(15+166+44)m * 6\times10^{-5}\right] + \left[42m * 0.1\right] + \left[42m * (208-42/2)m * \frac{6\times10^{-5}}{208\ m}\right]$$

$= 0.0135m + 4.2m + 0.003m \sim 4.2165\ m^3 / m^2 \sim 4{,}000{,}000m^3/km^2 \sim$ 3,200ACFT

WHAT IF IT IS NOT A SIMPLE SHAPE?



Use average drawdown over the area.