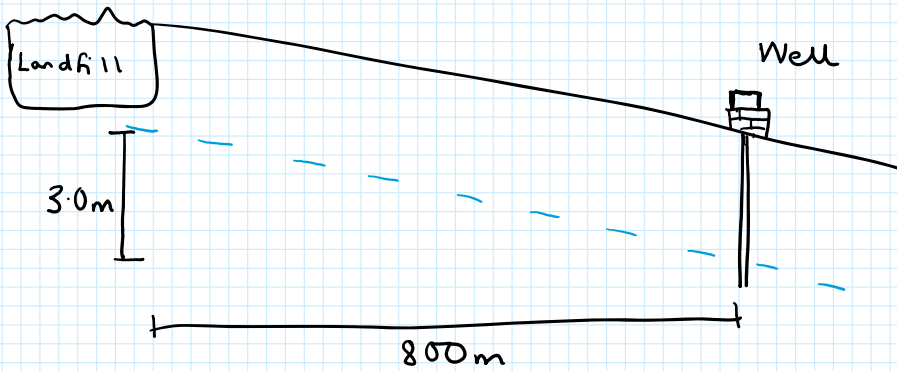


Question 1

$$k = 4 \text{ m/day}$$

$$n = 12\% = 0.12$$

Hydraulic Gradient (i)

$$i = \frac{\Delta h}{\Delta x} = \frac{3.0}{800} = \underline{\underline{0.00375}}$$

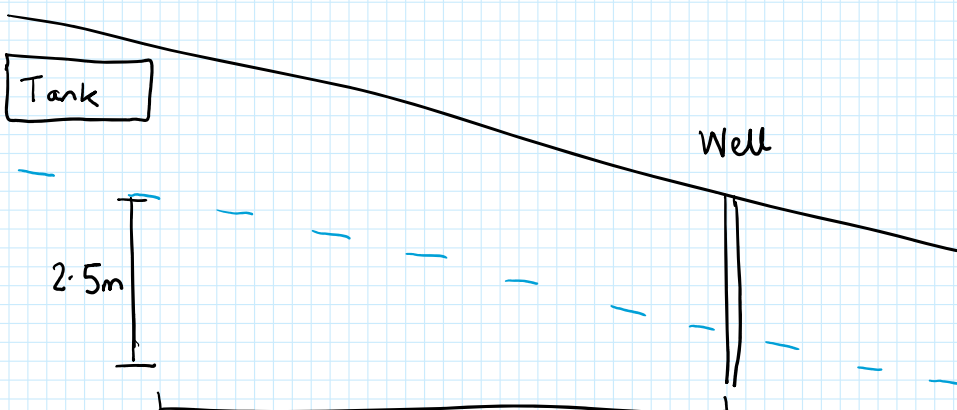
Velocity (v)

$$v = \frac{ki}{n_d} = \frac{4 \times 0.00375}{0.12} = \underline{\underline{0.125 \text{ m/day}}}$$

Time (t)

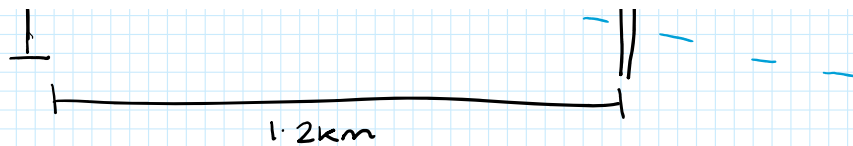
$$t = \frac{\Delta x}{v} = \frac{800}{0.125} = 6400 \text{ days}$$

$$= \underline{\underline{17.5 \text{ years}}}$$

Question 2

$$k = 6 \text{ m/day}$$

$$n = 14\% = 0.14$$



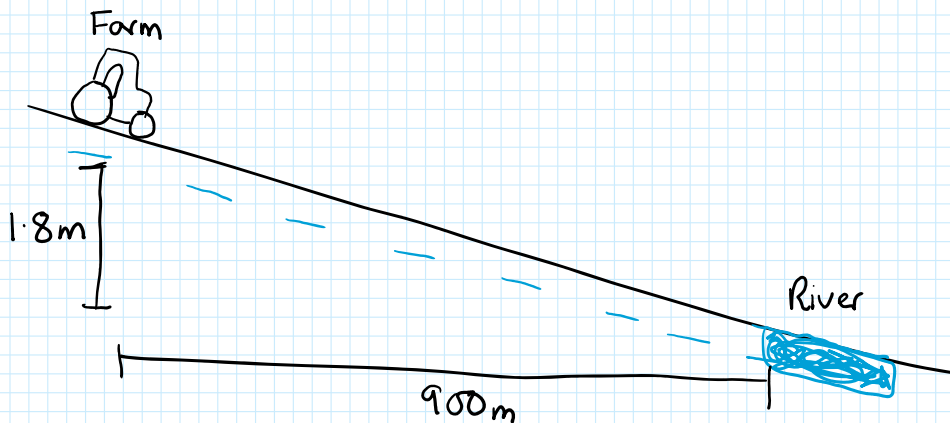
$$i = \frac{\Delta h}{\Delta x} = \frac{2.5}{1200} = \underline{\underline{0.0021}}$$

$$V = \frac{ki}{n_d} = \frac{6 \times 0.0021}{0.14} = \underline{\underline{0.09 \text{ m/day}}}$$

$$t = \frac{\Delta x}{V} = \frac{1200}{0.09} = 13333.33 \text{ days}$$

$$= \underline{\underline{36.5 \text{ years}}}$$

Question 3



$$k = 5.2 \text{ m/day}$$

$$n = 5\% = 0.05$$

$$i = \frac{\Delta h}{\Delta x} = \frac{1.8}{900} = \underline{\underline{0.0020}}$$

$$V = \frac{ki}{n} = \frac{5.2 \times 0.0020}{0.05} = \underline{\underline{0.208 \text{ /day}}}$$

$$t = \frac{\Delta x}{V} = \frac{900}{0.208} = 4326.92 \text{ days}$$

$$= \underline{\underline{11.9 \text{ years}}}$$