

Project name : Ditch Diggers

Observations and doodles	
Two diggers. Two ditches Day 1 → Day 10 Left one is digging faster.	
Questions	
Are they digging in straight lines? Will they meet? yes: where will they meet. no: how far apart will they be? when stop digging?	Need: Coordinates?
Wrong answers and guesses (Goldilocks)	
40 days before they meet is too large. 20 days is too little.	

Solve + explain

State your question:

digger 1

day	x	y
0	0	2
1	2	3
2	4	4
3	6	5
Day 4	8	6
	10	7

digger 2

day	x	y
	68	34
	67	33.5
	66	33
	65	32.5
	64	32
	63	31.5

Are they digging in straight line?

YES $\frac{\text{rise}}{\text{run}}$ is the same.

$$\text{slope } \frac{3-2}{2-0} = \boxed{\frac{1}{2}}$$

$$\frac{34-33}{68-66} = \boxed{\frac{+1}{2}}$$

$$\boxed{y = 2 + \frac{1}{2}x}$$

$$\boxed{y = \frac{1}{2}x}$$

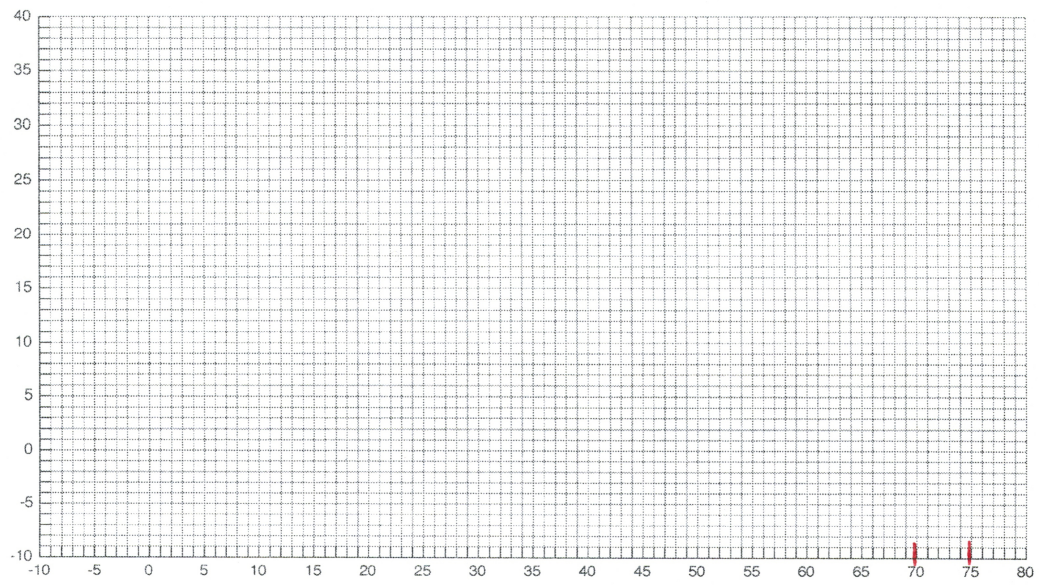
$$\text{Meet? } 2 + \frac{1}{2}x \stackrel{?}{=} \frac{1}{2}x$$

$2 \neq 0$ X never meet!

$$\begin{cases} x = 2d \\ y = 2 + d \end{cases}$$

$$\begin{cases} x = 68 - 1 \cdot d \\ y = 34 - \frac{1}{2}d \end{cases}$$

Ditch Diggers



days	digger 1 x, y	digger 2 x, y
0	0, 2	68, 34
20	40, 22	48, 24
24	52, 28	42, 21
24	48, 26	44, 22
22	44, 29	46, 23

very close

Distance

