

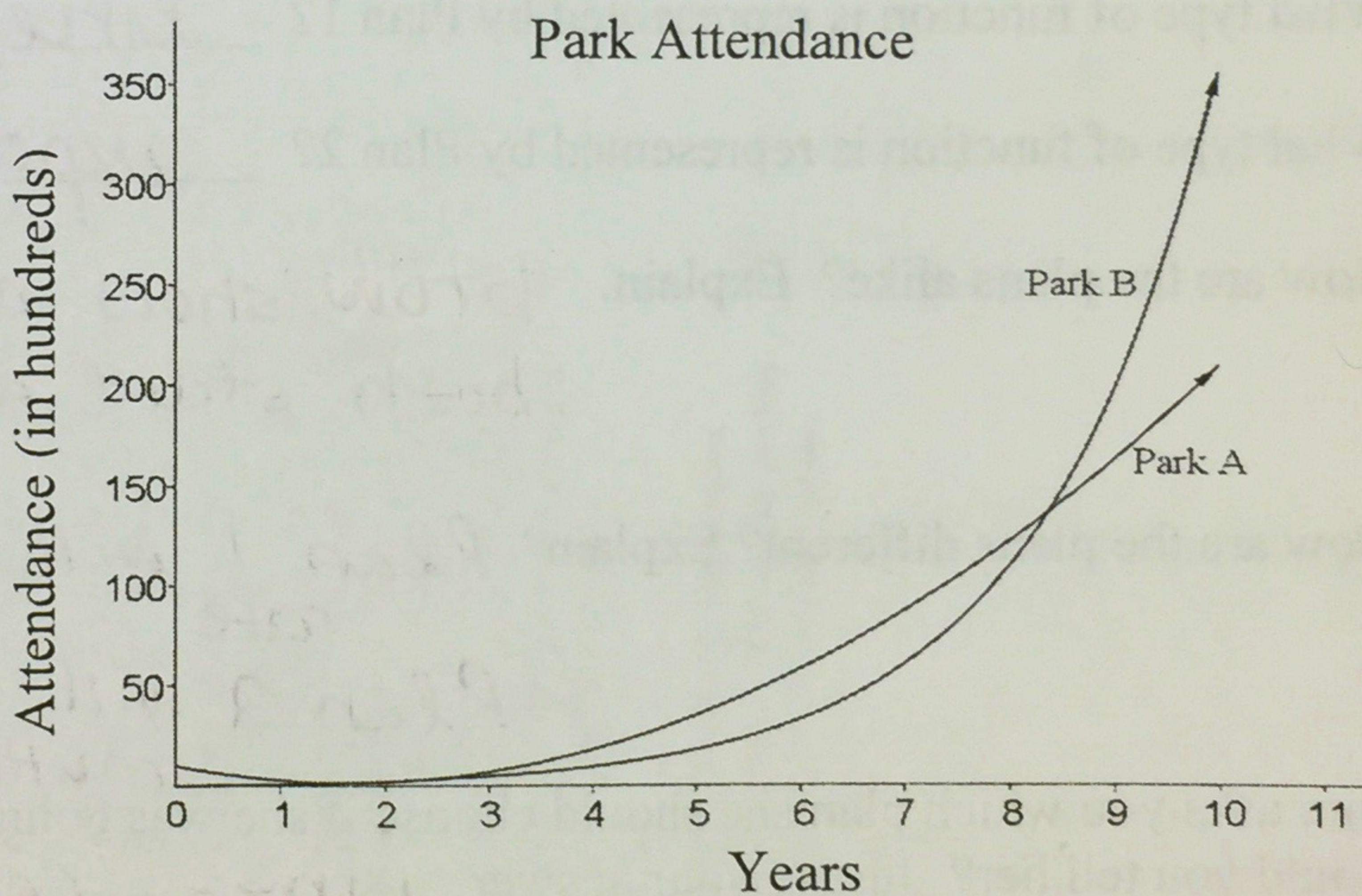
Mr. Wiggins gives his daughter Celia two choices of payment for raking leaves:

- i. Two dollars for *each* bag of leaves filled, $y = 2x$
- ii. She will be paid for the number of bags of leaves she rakes as follows: two cents for filling one bag, four cents for filling two bags, eight cents for filling three bags, and so on, with the amount doubling for each additional bag filled. $y = 2^x$

- a. If Celia rakes enough to five bags of leaves, should she opt for payment method 1 or 2? What if she fills ten bags of leaves? $\textcircled{1} y = 2(5) = \10 $\textcircled{2} y = 2^5 = \32 $\textcircled{1} 2(10) = \20 $\textcircled{2} 2^{10} = \1024 → OPT. 2
- b. How many bags of leaves would Celia have to fill before method 2 pays more than method 1? 3 bags $\textcircled{1} \begin{array}{r|l} x & y \\ \hline 1 & 2 \\ 2 & 4 \\ 3 & 6 \end{array}$ $\textcircled{2} \begin{array}{r|l} x & y \\ \hline 1 & 2 \\ 2 & 4 \\ 3 & 8 \end{array}$

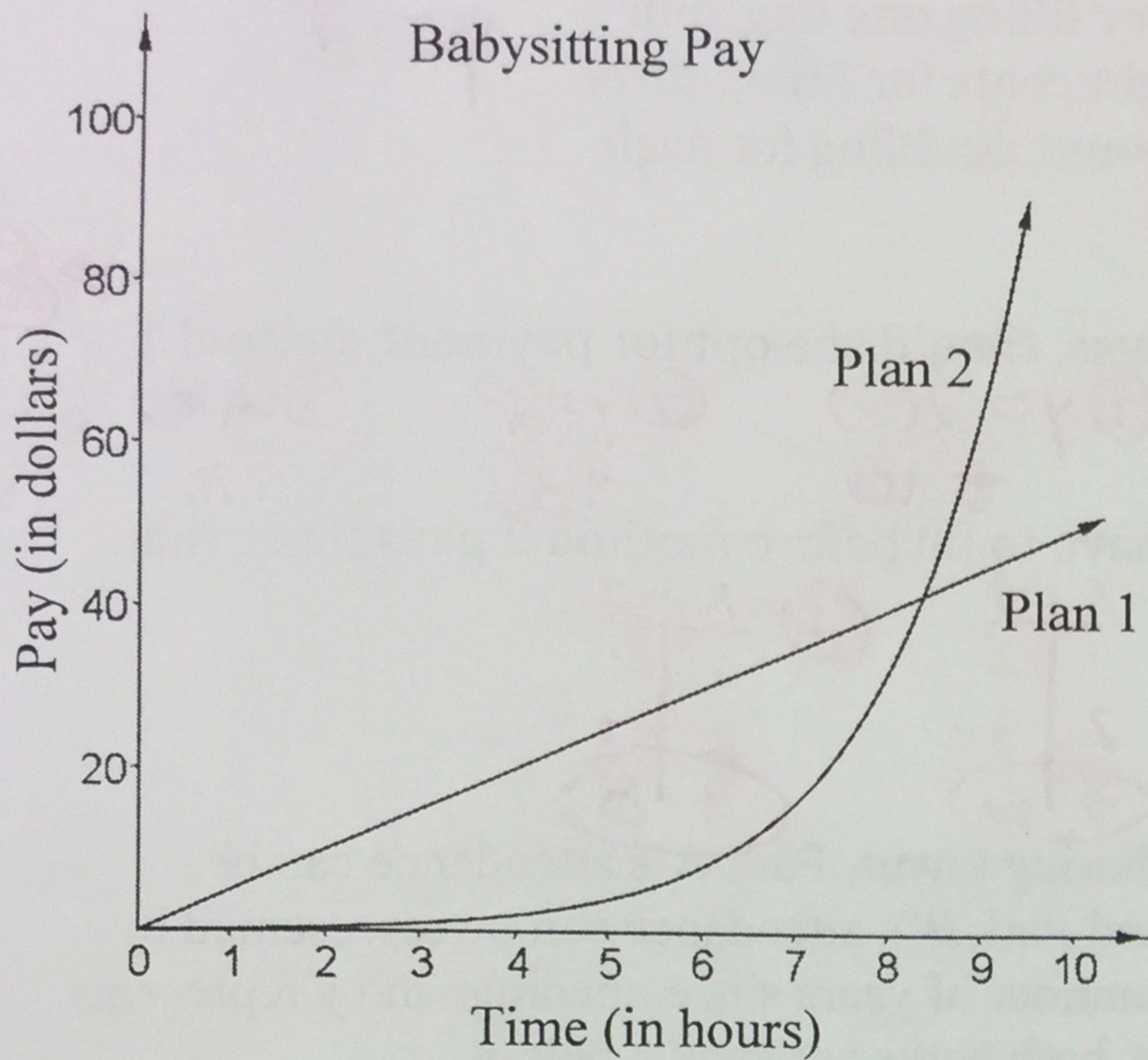
Two nature parks opened the same year in neighboring towns. Park A's attendance can be represented by the equation $y = 3x^2 - 10x + 10$, and Park B's attendance can be represented by the equation $y = 1.8^x - 1$, where x represents the number of years since opening, and y represents the attendance in hundreds. Tables and graphs for both parks are shown below.

Year	Park A	Park B
1	3	0.8
2	2	2.2
3	7	4.8
4	18	9.5
5	35	17.9
6	58	33.0
7	87	66.2
8	122	109.2
9	163	197.4



1. In which years does Park A have the greater attendance? **years 1-7**
2. In which years does Park B have the greater attendance? **years 8-9**
3. Describe how the functions are different. **A: Quad; grows by 16 in 2nd set of diff**
B: Exponential; grows by a multiplication rate
4. If the trends continue, will Park A's attendance ever surpass Park B's attendance again? Explain. **No; once the rate gets above for Park B it will continue to grow at an even larger rate**

Sara has been asked to babysit for a neighbor. She is offered two payment options. With the first plan, she is paid \$5.00 per hour. With the second plan, she is paid \$0.25 for one hour, \$0.50 for two hours, \$1.00 for three hours, and so on, as shown in both the graph and the table.



Hours	Plan 1	Plan 2
1	5.00	0.25
2	10.00	0.50
3	15.00	1.00
4	20.00	2.00
5	25.00	4.00
6	30.00	8.00
7	35.00	16.00
8	40.00	32.00
9	45.00	64.00
10	50.00	128.00

1. What type of function is represented by Plan 1? linear
2. What type of function is represented by Plan 2? exponential
3. How are the plans alike? Explain. both show an increasing rate
both start at zero
4. How are the plans different? Explain Plan 1 will increase at a constant rate
Plan 2 will increase following a multiplication rate
5. Sara asks you which plan she should choose if she was going to babysit for four hours. What would you tell her? Justify your answer. Linear (Plan 1) she would make \$20 under plan 1 but only 2 dollars in Plan 2
6. When should Sara choose Plan 2? Why? at 9 hours and up. At 9 hours plan 2 will grow at a tremendous rate and be massively higher than plan 1.