

Algebra 1

Sec 8-7, 8-8 Exponential equations.

You will be taking a new job for the entire month of June (all 30 days!) and have been given the choice of how you want to be paid. Below are the two options.

Option #1: You will be paid \$50,000 at the end of the 1st day then given \$5000 at the end of each following day.

Option #2: You will be given 2 pennies at the end of the 1st day then each following day you will be given enough pennies so that the total number of pennies you have is twice as much as you had the day before.

1. Create a table for each option and fill it out for the first 10 days.

Option 1

Option 2

End of Day #	Total amount earned at day's end	End of Day #	# of pennies at the end of the day
1	\$50,000	1	2
2	$50,000 + 5000 = 55,000$	2	$2 + 2 = 4$
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	

2. Write an equation for each option.

Option #1: $x = \# \text{ days}$

Option #2: $x = \# \text{ days}$

(hint: look at the day # and see how many times you've added \$5000)

(compare the totals to see how they are related)

3. Find the amount of money that you would have earned at the end of the day on June 30th for each option.

Option #1:

Option #2:

4. Which option would you choose and why?

Algebra 1

Sec 8-7, 8-8 Exponential equations.

Answers

You will be taking a new job for the entire month of June (all 30 days!) and have been given the choice of how you want to be paid. Below are the two options.

Option #1: You will be paid \$50,000 at the end of the 1st day then given \$5000 at the end of each following day.

Option #2: You will be given 2 pennies at the end of the 1st day then each following day you will be given enough pennies so that the total number of pennies you have is twice as much as you had the day before.

1. Create a table for each option and fill it out for the first 10 days.

Option 1

Option 2

End of Day #	Total amount earned at day's end	End of Day #	# of pennies at the end of the day
1	\$50,000	1	2 = 2 2^1
2	50,000 + 5000 = 55,000	2	2 + 2 = 4 = 2 · 2 2^2
3	50,000 + 5000 + 5000 = 60,000	3	2 · 2 · 2 = 8 2^3
4	75,000 = 50,000 + 5000 + 5000 + 5000	4	2 · 2 · 2 · 2 = 16 2^4
5	80,000 = 50,000 + 5000 + 5000 + 5000 + 5000	5	2^5
6	85,000 = 50,000 + 5000(5)	6	2^6
7	90,000 = 50,000 + 5000(6)	7	2^7
8		8	2^8
9		9	2^9
10	50,000 + 5000(9)	10	= 1024 = 2^{10}

2. Write an equation for each option.

Option #1: $x = \# \text{ days}$

(hint: look at the day # and see how many times you've added \$5000)

$$y = 50,000 + 5000(x-1)$$

5000 doesn't start until Day 2

Option #2: $x = \# \text{ days}$

(compare the totals to see how they are related)

$$y = 2^x$$

3. Find the amount of money that you would have earned at the end of the day on June 30th for each option.

Option #1:

\$195,000

Option #2:

2^{30} pennies

$$10,737,418,24 \div 100$$

$$= \$10,737,418.24$$

4. Which option would you choose and why?

OPTION #2
over \$10 million
VS

\$195,000

is an easy decision!