

The Prize Is Right?



Congratulations! You have won the grand prize on your favorite TV game show! There is only one thing you have to decide – which payment option has the best payout?

You must pick one of two payment plans to receive your winnings. (Hint: One choice will give you a much larger pay-out)

Here are your choices.

Choice 1: Receive \$1000 everyday for 3 weeks.

Choice 2: Receive \$1.00 the first day, double that amount to \$2.00 the next day, double that amount to \$4.00 the third day, \$8.00 the fourth day and continue in that pattern for 3 weeks.



Use the calendars below to figure out if you made the choice that will give you the greatest payout (Mega Bucks). Notice: The first few days for each choice have been filled in for you.

Choice 1: Receive \$1000 everyday for 3 weeks

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|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Day 1 Winnings \$1000 | Day 2 Winnings \$1000 | Day 3 Winnings \$1000 | Day 4 Winnings \$1000 | Day 5 Winnings \$1000 | Day 6 Winnings \$1000 | Day 7 Winnings \$1000 |
| Total so far \$1000 | Total so far \$2000 | Total so far \$3000 | Total so far | Total so far | Total so far | Total so far |
| Day 8 Winnings \$1000 | Day 9 Winnings \$1000 | Day 10 Winnings \$1000 | Day 11 Winnings \$1000 | Day 12 Winnings \$1000 | Day 13 Winnings \$1000 | Day 14 Winnings \$1000 |
| Total so far | Total so far | Total so far | Total so far | Total so far | Total so far | Total so far |
| Day 15 Winnings \$1000 | Day 16 Winnings \$1000 | Day 17 Winnings \$1000 | Day 18 Winnings \$1000 | Day 19 Winnings \$1000 | Day 20 Winnings \$1000 | Day 21 Winnings \$1000 |
| Total so far | Total so far | Total so far | Total so far | Total so far | Total so far | Total so far |

Choice 2: Receive just \$1.00 the first day, double that amount to \$2.00 for the winnings on the second day, double the amount to \$4.00 for the winnings on the third day, \$8.00 for the fourth day continue the pattern for 3 weeks.

Hint: Calculate the total so far by adding the previous day's total to the new day's winnings.

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|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| Day 1 Winnings \$1 | Day 2 Winnings \$2 | Day 3 Winnings \$4 | Day 4 Winnings \$8 | Day 5 Winnings \$16 | Day 6 Winnings \$ | Day 7 Winnings \$ |
| Total so far \$1 | Total so far \$3 | Total so far \$7 | Total so far \$15 | Total so far \$31 | Total so far \$ | Total so far \$ |
| Day 8 Winnings \$ | Day 9 Winnings \$ | Day 10 Winnings \$ | Day 11 Winnings \$ | Day 12 Winnings \$ | Day 13 Winnings \$ | Day 14 Winnings \$ |
| Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$16,383 |
| Day 15 Winnings \$ | Day 16 Winnings \$ | Day 17 Winnings \$ | Day 18 Winnings \$ | Day 19 Winnings \$ | Day 20 Winnings \$ | Day 21 Winnings \$ |
| Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ | Total so far \$ |

So, did you make the best choice? _____

Why did this happen? Choice 1 is a linear model because the same amount is being added each day. Choice 2 is an exponential model because you are multiplying by 2 every time.

Test your understanding by completing the following sentence (Circle or underline the correct answer).

The *exponential/linear* model will beat out the *exponential/linear* model in the long run.

Now that you know the answer why don't you ask your parents, friends or even your teacher which choice they would make.



5-7 Benchmark Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures.