

Answer Key

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 \$4000 | Total so far \$5000 | Total so far \$6000 | Total so far \$7000 |
| 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 \$8000 | Total so far \$9000 | Total so far \$10,000 | Total so far \$11,000 | Total so far \$12,000 | Total so far \$13,000 | Total so far \$14,000 |
| 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 \$15,000 | Total so far \$16,000 | Total so far \$17,000 | Total so far \$18,000 | Total so far \$19,000 | Total so far \$20,000 | Total so far \$21,000 |

So, did you make the best choice? **Choice 2 had the largest payout (\$2,097,151 vs. \$21,000)**

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.

See if you understand by completing the following sentence. Circle or underline the correct answer.

The **exponential** model will beat out the **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.

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 \$32 | Day 7 Winnings \$64 |
| Total so far \$1 | Total so far \$3 | Total so far \$7 | Total so far \$15 | Total so far \$31 | Total so far \$63 | Total so far \$127 |
| Day 8 Winnings \$128 | Day 9 Winnings \$256 | Day 10 Winnings \$512 | Day 11 Winnings \$1024 | Day 12 Winnings \$2048 | Day 13 Winnings \$4096 | Day 14 Winnings \$8192 |
| Total so far \$255 | Total so far \$511 | Total so far \$1023 | Total so far \$2047 | Total so far \$4095 | Total so far \$8191 | Total so far \$16,383 |
| Day 15 Winnings \$16,384 | Day 16 Winnings \$32,768 | Day 17 Winnings \$65,536 | Day 18 Winnings \$131,072 | Day 19 Winnings \$262,144 | Day 20 Winnings \$524,288 | Day 21 Winnings \$1,048,576 |
| Total so far \$32,767 | Total so far \$65,535 | Total so far \$131,071 | Total so far \$262,143 | Total so far \$524,287 | Total so far \$1,048,575 | Total so far \$2,097,151 |



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