The Story of Kami and Jamil and Alex

# Part 1: Kami and Jamil

Kami and Jamil are saving for their future retirement. Both choose a bank that offers 2% compound interest. Both invest the same amount—$24,000 of their job earnings—over time.

Kami is able to save more money at first, but Jamil continues to put money in the bank every year. To calculate the compound interest, use the formula from the reading,

$$FV=PV×(1+r)^{n}$$

*(Future Value (FV) is equal to Present Value (PV) times 1 plus the interest rate (1 + r) raised to the exponent of the number of interest payments (n).)*

## Who benefits the most from compound interest? What would you predict?

| Age | Kami Invests | Kami’s Account | Jamil Invests | Jamil’s Account |
| --- | --- | --- | --- | --- |
| 27 | $3000 | $3,060.00 | $1000 | $1020.00 |
| 28 | $3000 | $6181.20 | $1000 | $2060.40 |
| 29 | $3000 | $9364.82 | $1000 | $3,121.60 |
| 30 | $3000 | $12,612.11 | $1000 | $4204.03 |
| 31 | $3000 | $15,924.35 | $1000 | $5,308.11 |
| 32 | $3000 | $19,302.83 | $1000 | $6434.27 |
| 33 | $3000 | $22,748.88 | $1000 | $7582.95 |
| 34 | $3000 | $26,263.85 | $1000 | $8754.60 |
| 35 | $0 | $26,789.12 | $1000 | $9949.69 |
| 36 | $0 | $27,324.90 | $1000 | $11,168.68 |
| 37 | $0 | $27,871.39 | $1000 | $12,412.05 |
| 38 | $0 | $28,428.81 | $1000 | $13,680.29 |
| 39 | $0 | $28,997.38 | $1000 | $14,973.89 |
| 40 | $0 | $29,577.32 | $1000 | $16,293.36 |
| 41 | $0 | $30,168.86 | $1000 | $17,639.22 |
| 42 | $0 | $30,772.23 | $1000 | $19,013.00 |
| 43 | $0 | $31,387.67 | $1000 | $20,413.26 |
| 44 | $0 | $32,015.42 | $1000 | $21,841.52 |
| 45 | $0 | $32,655.72 | $1000 | $23,298.35 |
| 46 | $0 | $33,308.83 | $1000 | $24,784.31 |
| 47 | $0 | $33,975.00 | $1000 | $26,299.99 |
| 48 | $0 | $34,654.50 | $1000 | $27,845.98 |
| 49 | $0 | $35,347.59 | $1000 | $29,422.89 |
| 50 | $0 | $36,054.54 | $1000 | $31,031.34 |

# Part 2: Alex

Alex is Jamil’s good friend who started saving money at the same time as Jamil. Like Kami and Jamil, he also saved $24,000 from his earnings over time. His bank did not offer compound interest but offered a 2% savings plan.

See how much money Alex earned without compound interest. Calculate Alex's savings by adding the amount he invests to the account balance and then multiplying by .2. Then for the following year, add the investment for that year to the account balance and multiply by .2.

| Age | Alex Invests | Alex’s Account |
| --- | --- | --- |
| 27 | $1000 | $1020.00 |
| 28 | $1000 | $2040.00 |
| 29 | $1000 | $3060.00 |
| 30 | $1000 | $4080.00 |
| 31 | $1000 | $5100.00 |
| 32 | $1000 | $6120.00 |
| 33 | $1000 | $7140.00 |
| 34 | $1000 | $8160.00 |
| 35 | $1000 | $9180.00 |
| 36 | $1000 | $10,200.00 |
| 37 | $1000 | $11,220.00 |
| 38 | $1000 | $12,240.00 |
| 39 | $1000 | $13,260.00 |
| 40 | $1000 | $14,280.00 |
| 41 | $1000 | $15,300.00 |
| 42 | $1000 | $16,320.00 |
| 43 | $1000 | $17,340.00 |
| 44 | $1000 | $18,360.00 |
| 45 | $1000 | $19,380.00 |
| 46 | $1000 | $20,400.00 |
| 47 | $1000 | $21,420.00 |
| 48 | $1000 | $22,440.00 |
| 49 | $1000 | $23,460.00 |
| 50 | $1000 | $24,480.00 |

## \*Note: Some amounts might vary slightly depending on students’ rounding strategy.

# Questions

1. Both Kami and Jamil invested $24,000 for retirement. Who benefitted the most from compound interest? Explain why.

#### Because Kami invested her money in larger amounts initially, she received more compound interest money on the principal. After 8 years, she had a large amount of principal plus interest that continued to yield a higher amount of compound interest.

1. Alex invested $24,000 for retirement in the same way that Jamil did. How much less than Jamil did Alex earn for retirement without compound interest?

#### Almost $7,000 less than Jamil.

1. What advice would you give someone who is thinking about saving for retirement?

#### Answers will vary. Compound interest always yields people more money than simple interest. It’s best to save as much money as you can as early as you can, because you will earn larger amounts of interest.