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| Liza was given $1000 when she graduated from high school. She decided to invest it in a savings account earning 8% interest compounded annually to put towards her master’s degree in the future. How much money will Liza have in ten years? (DOK 2)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | River High School is overrun with cockroaches. Resources show that a thriving population of 4400 roaches are crawling through the walls. The exterminator sets up a device to help eliminate the problem which is expected to decrease the population by 12% each week. How many roaches will they have in 6 weeks? (DOK 2)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Sarah’s business ended up earning $10,000 profit its first year open It is expected to triple its profit by 2025. How much will Sarah be making in 2025? (Current year is 2019).  (DOK 1)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Elk were re-introduced in north Carolina in 2001. That year, they brought in 25 elk, the following year they brought in 27. Each additional year, the population of elk increased 6%. How many elk can we predict are in North Carolina this year?  (DOK 3)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Determine the balance of a $500 investment at 8% interested compounded quarterly after seven years.  (DOK 1)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Brad has accumulated a lot of debt buying video games over the years. He currently has a balance of $4200 on his credit card but plans to pay half his debt each week. How much will Brad have left in six weeks?  (DOK 1)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Randy bought a motorcycle with his first paycheck at his new job. The motorcycle cost $17,000 and depreciates in value by 7% each year. How much will it be worth in five years when he is ready to trade it in? (DOK 2)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | The population of Marietta has increased by 6% since you moved here in 2001. If the current population is 61,048, what was it when you first moved? (Current year is 2019).  (DOK 3)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | If you invest $2000 in a savings account with 10% interest compounded monthly, How much will you have in eight years? (DOK 2)  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Modeling with Tic-Tac-Toe**: Choose any three problems to complete following tic-tac-toe order. If you get all three right you win, if not I win! Choose Wisely!

**Rubric:** A ✓ indicates student has met expectations for corresponding problem. An 🗶 indicates areas not meeting expectations and needing improvement. A total of 3 points exceeds expectations, 2 points meets expectations, and 1 point needs improvement.

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|  | Problem 1 | Problem 2 | Problem 3 |
| Equations (.5 pts)  All equations are correctly set up with terms in appropriate places. | \_\_\_\_\_\_ (.5) | \_\_\_\_\_\_ (.5) | \_\_\_\_\_\_ (.5) |
| Solutions (.5pts)  All solutions are accurate and make sense in the context of the problem. | \_\_\_\_\_\_ (.5) | \_\_\_\_\_\_ (.5) | \_\_\_\_\_\_ (.5) |

\_\_\_\_\_\_\_\_ / 3 pts total

**Answer Key:**

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| Equation: A = 1000(1.08)10  Solution: A = $21,58.92 | Equation: y = 4400(0.88)6  Solution: y = 2043 Roaches | Equation: y = 10,000(3)6  Solution: $7,290,000 |
| Equation: y = 52(1.06)17  Solution: 140 Elk | Equation: A = 500(1.02)28  Solution: A = $870.51 | Equation: y = 4200(1/2)6  Solution: $65.63 |
| Equation: A = 17,000(0.93)5  Solution: A = $11,826.70 | Equation: 61,048 = p(1.06)18  Solution: 21,388 people | Equation: A = 2000(1.0083)96  Solution: $4,436.35 |