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| **Solving for an Unknown in Multi-Step Equations** |
| Uses ‘guess and check.’ 28 – *t* = 12“I know 28 – 8 = 20.So, t must be more than 8.28 – 10 = 18 (too high)28 – 15 = 13 (too high, but close)So, *n* = 16 because 28 – 16 = 12.” | Uses the balance model.“I subtracted 7 from each side to keep the balance and to make the equation easier to solve. | Uses relationships among operations (inverse operations, associative property).28 = 4*x* $∎$ + 4“I rewrote it as a subtraction equation, then divided both sides by 4.” 28 – 4 = 4*x* 🡪 24 = 4*x* 🡪 6 = *x* |
| **Observations/Documentation** |
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| **Solving for an Unknown in Multi-Step Equations (con’t)** |
| Uses a flow chart and inverse operations. 3*d* + 5 = 65 “I decomposed the equation into parts, then reversed the flow using inverse operations.” | Writes an equation with an unknown to solve a problem.Chico works for a dog-walking company. Chico earns $25 a day, plus $5 for every dog he walks. On Thursday, Chico earned $70. How many dogs did Chico walk?“I let *d* represent the number of dogs Chico walked. I wrote the equation: 70 = 25 + 5*d*.” | Flexibly uses multiple strategies to solve equations.“I made the equation easier to solve by decomposing 70, subtracting 25 from each side, then dividing both sides by 5.” |
| **Observations/Documentation** |
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| **Solving and Graphing Inequalities** |
| Identifies range of numbers in solution to inequalities.45 + 5*n* ≥ 10045 + 5*n* > 100“Each time, the unknown can be any number greater than 11. In the second equation, it could also be 11. There are many quantities that would work.” | Represents solutions to simple inequalities by graphing on a number line.At least 11 cars need to be washed. “Since 11 is part of the solution, I drew a closed circle at 11. Since n must be greater than or equal to 11, the arrow goes to the right.” | Verifies the solution to an inequality.45 + 5*n* ≥ 100*n* ≥ 11 “To check, I substituted a number greater than 11 into the left side.45 + 5(20) = 145.Since 145 > 100, the solution is correct.” | Flexibly solves inequalities using various strategies, then verifies and graphs the solutions.  |
| **Observations/Documentation** |
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