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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* ≥ 100  45 + 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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