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| 7th Unit 3 – Equations  Performance Task 1 |
| ***Standard(s) Addressed:***  **7.EE.3** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.  **7.EE.4** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.  a. Solve word problems leading to equations of the form *px + q = r* and *p(x + q) = r*, where *p*, *q*, and *r* are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. |
| ***Task:***  Saving Money   1. Bennett wants to start an odd job business to save up for a bicycle. He already has $30 saved, but knows he will need to earn more to purchase the bike that he wants. He puts the following flyer up around this neighborhood.  |  |  | | --- | --- | | Need help around your house? Call Bennett to help you complete any odd job around your house!  No job too big or too small!!!! | 1. How much would Bennett have in all if he did 1 hour of odd jobs? 2. How much would Bennett have in all if he did 2 hours of odd jobs? 3. How much would Bennett have in all if he did 3 hours of odd jobs? |   d. Write an equation that gives Bennett’s total savings (t) for the number of hours (h) of odd jobs that he completes.  e. Bennett found a bike that he likes for $156.50 that he wants to purchase. Solve the equation that you wrote to determine how many hours he would have to do odd jobs to purchase the bike. Explain each step that you use to solve the equation using the context of the situation.   1. JaBria is also starting an odd job business since she only has $12 in her savings. She is working to save up money to purchase a TV that retails for $124. JaBria completes odd jobs for $14 a job, no matter how long it takes her. 2. JaBria set up the equation 12 + 14*j* = 124 to represent her savings. Solve for *j*. 3. Explain what the variable *j* represents in the situation. |
| ***Solution and Rubric:***  Saving Money   1. Bennett wants to start an odd job business to save up for a bicycle. He already has $30 saved, but knows he will need to earn more to purchase the bike that he wants. He puts the following flyer up around this neighborhood.  |  |  | | --- | --- | | Need help around your house? Call Bennett to help you complete any odd job around your house!  No job too big or too small!!!! | 1. How much would Bennett have in all if he did 1 hour of odd jobs?   30 + 5.50 = $35.50   1. How much would Bennett have in all if he did 2 hours of odd jobs?   30 + 5.50(2) = $41   1. How much would Bennett have in all if he did 3 hours of odd jobs?   30 + 5.50(3) = $46.50 |   d. Write an equation that gives Bennett’s total savings (t) for the number of hours (h) of odd jobs that he completes.  *t* = 5.50*h* + 30  e. Bennett found a bike that he likes for $156.50 that he wants to purchase. Solve the equation that you wrote to determine how many hours he would have to do odd jobs to purchase the bike. Explain each step that you use to solve the equation using the context of the situation.   |  |  | | --- | --- | | 156.50 = 5.50*h* + 30  - 30 - 30  126.50 = 5.50h  5.50 5.50  h = 27  23 hours | -Take 30 away from each side. Represents the savings you already had.  -Divide the remaining amount of money that he needs to earn by the amount he earns per hour. The resulting number will be the amount of hours he must work. |  1. JaBria is also starting an odd job business since she only has $12 in her savings. She is working to save up money to purchase a TV that retails for $124. JaBria completes odd jobs for $14 a job, no matter how long it takes her. 2. JaBria set up the equation 12 + 14*j* = 124 to represent her savings. Solve for *j*.   -12 -12  14j = 112  14 14  j = 8   1. Explain what the variable *j* represents in the situation.   j stands for the number of odd jobs that JaBria must complete. She charges $14 per odd job, so to determine the total amount she earns, you multiple 14 by j.  In 2a, j = 8 means that she must complete 8 jobs.   |  |  |  |  | | --- | --- | --- | --- | | 4 | 3 | 2 | 1 | | •Student demonstrates complete understanding of the mathematical concepts.  •The solutions completely address all mathematical concepts presented in the task.  •Where required, there is a clear, proficient explanation of the solution. | •Student demonstrates nearly complete understanding of mathematical concepts.  •The solutions address almost all of the mathematical concepts presented in the task. Minor errors may exist.  •Where required, there is a clear, explanation of the solution. | •Student demonstrates a vague understanding of the mathematical concepts.  •The solutions address some, but not all the mathematical concepts presented in the task.  •Where required, explanations are incomplete or not clear. | •Student demonstrates limited or no understanding of the mathematical concepts.  •The solutions do not address any of the mathematical concepts in the task.  •There is no explanation of the solution. | |
| ***Source(s):***  *Adapted from http://collaborate.caedpartners.org/display/SAI/CORE+Math+Performance+Assessment+Modules* |