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| **Synopsis of high-quality task:**  This is a three-act task and extension activity that allows students to use many math concepts (rate, ratio, expressions, exponents, division).  **Anticipated student time spent on task:** 45 to 60 minutes  **Student task structure(s):** Partner or Group Work |
| [**Math Content Standards and Practices:**](http://www.doe.mass.edu/frameworks/math/2017-06.pdf)  **6.EE.A.1** Write and evaluate numerical expressions involving whole number exponents.  **6.NS.B.2** Fluently divide multi-digit numbers using the standard algorithm  **6.RP.A.3** Use ratio and rate reasoning to solve real world and mathematical problems.  **SMP1** Makes sense of problems and persevere in solving them.  **SMP4** Model with mathematics.  **SMP6** Attend to precision. |
| **Prior Knowledge:**  **6.RP.A.1** Understand the concept of a ratio including the distinctions between part: part and part: whole and the value of a ratio; part/part and part/whole. Use ratio language to describe a ratio relationship between two quantities.  **6.RP.A.2** Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 and use rate language in the context of a ratio relationship, including the use of units. Expectations for unit rates in this grade are limited to non-complex fractions. |

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| **Connections to the real-world:**  Students will understand the significance of saving money and how it can affect them over short and long periods of time.  The three-act task also shows the significance of a penny and how it is worth more than most people think.  The extension activity will help students see how they may be able to save and earn money. |
| **Mastery Goals:**  Learning Objective:  Students will be able to evaluate an expression using whole number exponents.  Students will be able to use division to solve real-world problems.  Students will be able to apply ratio and rate reasoning to real-world problems.  Language Objective:  Students will be able to explain how to write an expression and how to solve that expression to a partner, to the teacher, and to the class. |
| **Instructional Tips/Strategies/Suggestions:**  **Act 1:** Ask the students to observe a picture of a large jar of coins. On a three-act task sheet have them write down things that they notice and things that they wonder. Discuss as a class. Write down questions that students are wondering to validate all student questions. Have students pick out the questions that are mathematical in nature.  Present the question that students will be exploring:  If a man from Louisiana saved his pennies for 45 years, how much money did he save?  **Act 2:** Give the students the following information:  He saved 31 pennies per day.  **Act 3:** Have the students watch the video:  <https://www.youtube.com/watch?v=ZfGtI3mab2E>  Extension:  Sheila's parents are encouraging her to save her money. Sheila currently has $3. Sheila's parents tell her that for every month she saves her money instead of spending it, they will double the amount of money she has! Sheila decides she will save her money and not spend it for 6 months. How could Sheila write an expression in exponential form and evaluate to determine how much money she will have in 6 months? |
| **Instructional Materials/Resources/Tools:**  Include:   * Three Act Task Sheet (see attached) * Act 1 Picture of Pennies * Projector and computer with internet * Act 3 Video   <https://www.youtube.com/watch?v=ZfGtI3mab2E>  **Accessibility and Supports:**  **Potential sentence starters:**  He collected \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pennies.  **Key academic vocabulary:** per hour, per year |

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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   |  | | --- | | **1. What do you notice?** | | **2. What do you wonder?** | | **3. Main Question:** | | **4. Estimate:**  Low Estimate  High  Estimate  *Place your best estimate on the number line and label.* | | **5. What information would you like to know?** |   **6. Answer**  **7. Show your work** |
| **Sample Student Work:**  Student work  Student work, showing their work |