MAT.HS.CR.2.0ACED.A.225

Sample Item ID:	MAT.HS.CR.2.0ACED.A.225
Grade:	HS
Primary Claim:	**Claim 2: Problem Solving** Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Algebra
Secondary Content Domain(s):	
Assessment Target(s):	2 A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 2 D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). 1 G: Create equations that describe numbers or relationships. 1 D (Gr 8): Analyze and solve linear equations and pairs of simultaneous linear equations. 1 D (Gr 7): Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
Standard(s):	A-CED.2, 8.EE.7, 7.EE.4
Mathematical Practice(s):	1, 4, 7
DOK:	2
Item Type:	CR
Score Points:	3
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	For photo book prices and sizes: http://www.snapfish.com/snapfish/fe/photo-books http://www.shutterfly.com/photo-books/custom-path
Target-specific attributes (e.g., accessibility issues):	
Notes:	Requires AI scoring.

David compares the sizes and costs of photo books offered at an online store. The table below shows the cost for each size photo book.

Book Size	Base Price	Cost for Each Additional Page
7-in. by 9-in.	$20	$1.00
8-in. by 11-in.	$25	$1.00
12-in. by 12-in.	$45	$1.50

The base price reflects the cost for the first 20 pages of the photo book.

1. Write an equation to represent the relationship between the cost, y, in dollars, and the number of pages, x, for each book size. Be sure to place each equation next to the appropriate book size. Assume that x is at least 20 pages.

7-in. by 9-in.

8-in. by 11-in.

12-in. by 12-in.

2. What is the cost of a 12-in. by 12-in. book with 28 pages?

3. How many pages are in an 8-in. by 11-in. book that costs $49?

Sample Top-Score Response:

1. 7-in. by 9-in. $y = x$

   8-in. by 11-in. $y = x + 5$

   12-in. by 12-in. $y = 1.50x + 15$

2. $57

3. 44 pages

Scoring Rubric:

Responses to this item will receive 0-3 points, based on the following:

3 points: The student has a solid understanding of how to make productive use of knowledge and problem-solving strategies to solve a problem arising in everyday life. The student writes equations to model a real-life situation and uses the equations to find answers to questions within a context. The student correctly writes all three cost equations in question 1, and uses the appropriate equations from question 1, or equivalent equations, to solve for the unknown cost in question 2 and the number of book pages in question 3.

2 points: The student demonstrates some understanding of how to make productive use of knowledge and problem-solving strategies to solve a problem arising in everyday life. The student writes equations to model the real-life situation in question 1, but does not write correct equations for all three cases. The student, however, demonstrates understanding of how to use the equations to find answers to questions within context. The answers for questions 2 and 3 represent correct calculations that may or may not use incorrect equation(s), or equivalent equations, written for question 1.

1 point: The student has basic understanding of how to make productive use of knowledge and problem-solving strategies to solve a problem arising in everyday life. The student writes equations to model a real-life situation for question 1, with one or more equations containing errors. The student demonstrates partial understanding of how to use the equations to find answers to questions within context. The answers for either question 2 or 3 represent an incorrect calculation using the equations, or equivalent equations, written for question 1.

0 points: The student demonstrates inconsistent understanding of how to make productive use of knowledge and problem-solving strategies to solve a problem arising in everyday life. The student is unable to write any correct equation for question 1. The answers to both questions 2 and 3 are incorrect calculations using the equations, or equivalent equations, written for question 1.