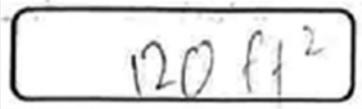


# Grade 7 / Case Study 2

➔ MATH \* SMARTER BALANCED PERFORMANCE TASK

ENGLISH LEARNER

Item 1	What is the area, in square feet, of the ceiling?
Student Response to Item 1	
Analysis of Response to Item 1	<p>This response receives a full score of 1 point. The student demonstrated an understanding of the properties of rectangles by inferring the lengths of the adjacent side, and applying the formula (<math>A = l \times w</math>) to calculate the area of the ceiling.</p>

Item 2	<p>Sam needs to figure out how much purple paint to buy. Calculate for her the total area, in square feet, of the four <b>walls</b>. She will <b>not</b> paint the door or windows.</p>
Student Response to Item 2	 A handwritten student response enclosed in a rectangular box. The text reads "322 sq ft". The word "sq" is written in a cursive style, and "ft" is written in a simple, blocky font.
Analysis of Response to Item 2	<p>This response receives a full score of 1 point. The student successfully calculated the area of the four walls and deducted the area for the two windows and door to arrive at the correct answer.</p>

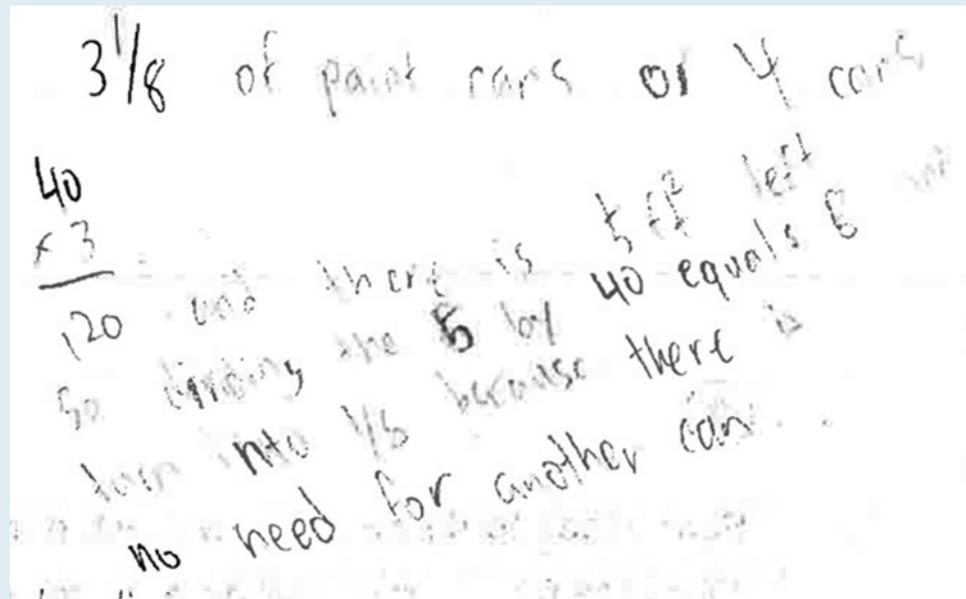
## Item 3

Part way through painting her room, Sam runs out of paint.

- She estimates that there are about 125 square feet left to paint.
- The purple paint that Sam is using is **only** available in 1-quart cans. (Assume she must buy whole cans of paint.)
- Each can of paint covers 40 square feet.

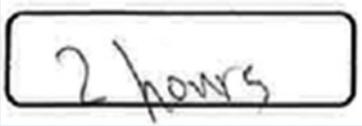
How many cans of paint does Sam **need** to buy to finish painting her room? Explain to Sam why she needs this many cans of paint.

## Student Response to Item 3



## Analysis of Response to Item 3

This response receives a partial score of 1 point. The response does not reflect that Sam "must buy whole cans of paint." The student demonstrated a flexible understanding of division by first multiplying  $40 \times 3 = 120$ . Realizing that there is a remainder of 5, the student further divided and created a fraction of  $\frac{1}{8}$ . S/he calculated the answer of  $3 \frac{1}{8}$ . The student's answer of "3 1/8 paint cans or 4 cans" leaves ambiguity as to how many cans are necessary, but suggests the student considered the need to buy whole cans of paint. Unfortunately, his/her statement "there is no need for another can" seems to negate the need to buy 4 cans of paint.

Item 4	<p>You decide to paint your room, too.</p> <p>Your room has 300 square feet of wall space to paint.</p> <p>Sam says it took her 10 minutes to paint 25 square feet.</p> <p>At this rate, how many <b>hours</b> would it take Sam to paint your room?</p>
Student Response to Item 4	 A handwritten response in black ink on a white background, enclosed in a hand-drawn rectangular box. The text reads "2 hours".
Analysis of Response to Item 4	<p>This response receives a full score of 1 point. The student coordinated the quantities of area, time, and rate to arrive at a quantity that s/he converted into hours.</p>

## Item 5

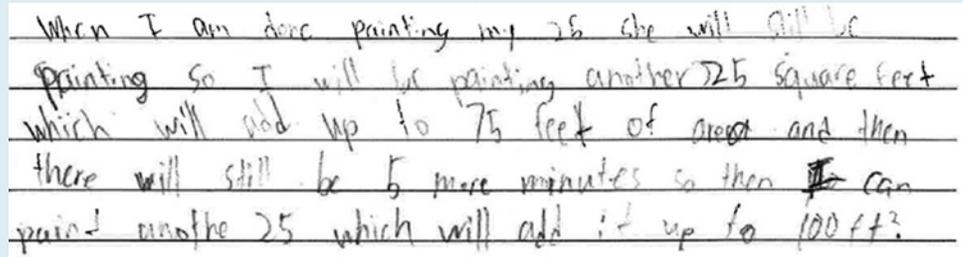
Sam and you are going to paint your room together.

Sam takes 10 minutes to paint 25 square feet.

It takes you 5 minutes to paint 25 square feet.

Sam says, "If we paint together, then it will take 15 minutes for us to cover 50 square feet." Give an explanation to convince Sam that she is **incorrect**.

## Student Response to Item 5



When I am done painting my 25 she will still be painting so I will be painting another 25 square feet which will add up to 75 feet of area and then there will still be 5 more minutes so then I can paint another 25 which will add it up to 100 ft<sup>2</sup>.

## Analysis of Response to Item 5

This response receives a full score of 2 points. The student used the rate of 5-minute segments to show evidence that Sam is incorrect ("When I am done painting my 25 she will still be painting"). The student gave evidence that at the end of 10 minutes they will have painted "75 feet of area." The student then accounted for the final 5 minutes of time and gave convincing evidence to refute Sam's claim.

## Overview of Student's Performance

This student is an English learner in a compacted honors seventh-grade class that covers content from the seventh and eighth grades. S/he has a thorough understanding of how to perform a range of calculations. In item 2, s/he calculated an answer that was incorrect and then crossed it out to put in the correct response. The student's attention to precision (MP 6) is evident in items 2 and 4. This precision, however, is primarily associated with calculating efficiently and accurately. The student would benefit from support in communicating reasoning precisely.

In item 3, the student used a flexible method to arrive at the exact answer. This presents some evidence of being able to use tools strategically (MP 5). The student understood that s/he would have a remainder of 5 after his/her estimate and subsequently converted it to a fraction. However, the response does not reflect the idea that paint cannot be bought in partial cans. Therefore, the student might benefit from lessons and problems that require attention to the meaning of quantities (MP 2) to overcome any difficulties with the variety of ways language is used to describe amounts and units. For example, "whole cans" and "1-quart cans" refer to the same amount in the explanation for item 3, and clarity about this redundancy would likely help the student develop a less ambiguous response than "3  $\frac{1}{8}$  paint cans or 4 cans."

## Next Steps

This student would benefit from learning opportunities that engage him/her in strengthening Math Practices 2, 4, and 6. Activities or work for this student should focus on attending to the meaning of quantities and discussing reasoning. The use of modeling may assist the student in making the connection between a quantity and a real-world application or representation. In addition, questions and discussions around Math Practice 6 would highlight clarity of responses and support the student in explaining how a solution is an answer to the problem.

In thinking about instructional design, the *Universal Design for Learning guidelines*— *Provide Options for Language, Mathematical Expressions, and Symbols* and *Provide Options for Comprehension*—would be the most beneficial. Considerations during lesson design should concentrate on the following: alternative ways to promote understanding of language, using various multimedia to make text more comprehensible, reducing barriers for decoding, clarifying important vocabulary and syntax, and translating content into usable knowledge.