

Focus
Standards
and Claim

Claim 4
6.RP.A

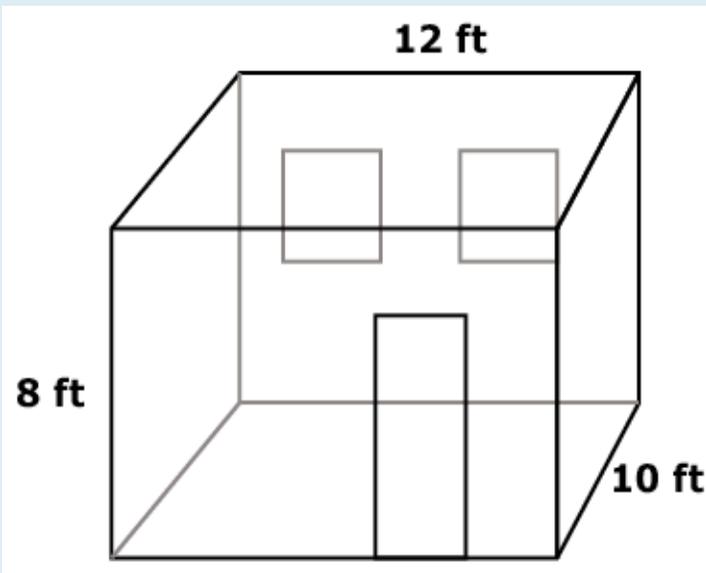
Stimulus

Let's Paint a Room

Your friend Sam wants to paint her room. She wants to paint the ceiling white and the four walls purple.

You are helping Sam determine the cost and the amount of time needed to paint her room.

The room is shaped like a rectangular prism with a height of 8 feet, length of 12 feet, and width of 10 feet as shown.



Additional information about Sam's room:

- The door has an area of 22 square feet.
- The room has 2 square windows.
- Each window opening is 2 feet by 2 feet.

Item Prompt

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.

Scoring Guide

SCORE	2 POINTS	1 POINT	0 POINTS
	<p>Correct response – 4 cans AND correct explanation</p> <p>Note: Due to the fact that 3.15 is very close to 3 cans, a student might successfully argue for just 3 cans if he/she acknowledges that Sam’s estimate may in fact be too high (it could be just 120 feet) or that she could possibly stretch the paint to finish the job. The key is that the explanation is thorough enough to show understanding that 3 cans is not enough unless some other factor is considered.</p>	<p>Correct response, 4 cans BUT no correct explanation OR 3.15 or equivalent with an acceptable explanation that clearly leaves out the fact that only whole cans can be bought.</p>	<p>All other responses; including 3, 3.15 cans, or $3\frac{5}{40}$ cans without an explanation.</p>

Sample Responses

Student Sample A



$$125 - 40 = 85$$

$$85 - 40 = 45$$

$$45 - 40 = 5$$

Sam by buying 3 cans you would have 5 square feet left to paint. If you get 4 you won't have any more square feet to paint. Also you would have extra paint left over for times when you need it.

SCORE RATIONALE

Using repeated subtraction, the student calculated that with only "3 cans you would have 5 square feet left to paint." Without explicitly stating that partial cans of paint cannot be bought, the student understood that by purchasing 4 cans, Sam can paint the entire room.

Student Sample B



$$125 / 40 = 3.12$$

$$40 \times 3 = 120$$

She would need to buy 4 full cans or 16 1 quart cans. The exact amount she needs is 3.12 but since you can't have a uneven amount she has to round and get 4 cans.

SCORE RATIONALE

The student clearly understood that "3.12" is the exact amount needed to complete the room, so Sam must get 4 cans "since you can't have an uneven amount." The "or 16 1 quart cans" is extraneous and suggests that the student was thinking about gallons and quarts.

Student Sample C



4 cans

125 divided by 40 is 3.125 to make them whole cans she would need 4 cans of paint.

SCORE RATIONALE

The student accurately divided and clearly understood that the paint can only be purchased in "whole cans."

Student Sample D

2
POINTS

4 cans because if she gets three she will have five feet left to paint.

SCORE RATIONALE

The response indicates that the student understood that 4 cans are needed to paint the room completely, and that 3 cans of paint will leave "... five feet left to paint."

Student Sample E

1
POINT

Sam only needs 4 cans of paint. Sam you only need 4 cans of paint because you only have 125 square feet left when 4 cans of paint equals 160 which is more then enough.

SCORE RATIONALE

The student stated that 4 cans "is more than enough," but did not indicate why 4 cans, versus a lesser amount, are needed.

Student Sample F

1
POINT

She needs to buy 4 more cans to finish painting her room.

SCORE RATIONALE

There is no explanation as to why 4 more cans are needed to finish painting the room.

Student Sample G

1
POINT

80
40
120
40
160
4 cans of paint.

SCORE RATIONALE

The response shows calculations for adding 4 cans of paint, and includes the correct number of cans needed, but does not include any explanation.

Student Sample H

1
POINT

3 $\frac{1}{8}$ of paint cans or 4 cans and there is 5 square feet left

so dividing the 5 by 40 equals $\frac{5}{40}$ and turn into $\frac{1}{8}$ because there is no need for another can

SCORE RATIONALE

The student stated "or 4 cans," but the explanation supports the reasoning for 3 $\frac{1}{8}$ cans "because there is no need for another can."

Student Sample I

0
POINTS

$125 / 40 = 31.02$

She will need about 32 cans because there is about 125 square feet to paint and each can paint 40 square feet so she will need about 32 cans.

SCORE RATIONALE

The student divided the correct amounts; however, the division, the decimal placement, and the rounding are all incorrect.

Student Sample J

0
POINTS

31.22 cans of paint

Rounded equals 32 cans of paint

SCORE RATIONALE

The student divided the correct amounts; however, the decimal is placed incorrectly and the rounding is incorrect.

Student Sample K

0
POINTS

She need 3 cans of paint. That will equal 120, so it need a little bit more.

SCORE RATIONALE

The student clearly understood that 3 cans are not enough, "so it need a little bit more." However, the response does not include evidence of taking into account that paint can only be purchased in whole cans.