

MeTEOR Performance Task

Fifth Grade

Mathematics

Painting Grandma's House

Performance Task Item: Painting Grandma's House

Task/Question 1:

Your Grandma needs three rooms inside her house painted. You and your brother have volunteered to help paint. Before you begin painting the interior walls, ceiling, woodwork and doors, you need to estimate the amount of paint you'll use. Estimates require specific calculations for each surface you want to paint.

- A.** To estimate the amount of paint you need to cover the walls of a room, add together the length of all the walls and then multiply the number by the height of the room, from floor to ceiling. The number you get is the room's square footage. Complete the chart below to get the total square footage of each room you need to paint.

Rooms	Length of the walls				Height	Total Square Footage
Living Room	26 feet	26 feet	29.5 feet	29.5 feet	10 feet	
Kitchen	26.75 feet	16 feet	26 feet	16 feet	10 feet	
Bedroom	11 feet	11 feet	23 feet	23 feet	8 feet	

Work Zone:

- B.** Once you determine the square footage (from Part A) for each room you will be painting, you need to determine how much of that square footage is a paintable surface area. (Note: Since you use a different paint on the doors and windows, you can subtract those areas from the room totals: subtract 20 square feet for *each* door/doorway and 15 square feet for *each* average-sized window in the room. Afterwards, you will end up with a number that is close to the actual wall area you have to cover with paint.)

Complete the chart below.

Rooms	Square Footage (from part A)	Number of Doors or Doorways	Number of Windows	Paintable Surface Area
Living Room		3	4	
Kitchen		2	2	
Bedroom		1	1	

Work Zone:

Task/Question 2:

Your Grandma needs to know how much paint she will need to purchase.

A. To determine the correct amount, complete the following:

- Step 1: Determine how many FULL gallons of paint is needed for each room
 - One gallon of paint will cover a paintable surface area of 350 square feet.
- Step 2: After determining the number of FULL gallons of paint, determine if you need an additional 2 quarts or another full gallon to complete the project
 - If your remainder from step 1 was less than .5 gallons, buy 2 extra quarts of paint
 - If your remainder from step 1 was more than .5 gallons, buy an extra gallon

Using the table below and information from Task 1-B and above, find the amount of paint you will need your grandma to buy.

Rooms	Paintable Surface Area	Gallons of Paint Needed	Quarts of Paint Needed
Living Room			
Kitchen			
Bedroom			

Work Zone:

- B.** Just when you thought you had it all figured out your Grandma decided she wanted each room to have 2 coats of paint. How does painting two coats affect your totals (from Part A)? Explain your answer in writing.

Task/Question 3:

- A.** Now that you have determined the amount of paint your grandma needs to purchase, you are ready to give Grandma the estimated cost of paint.

The brand of paint you plan to use costs \$22.99 a gallon and \$14.95 a quart. Based on your answers in Task 2A, what would be the total cost to paint each room? Complete the chart below.

Rooms	Total Cost for Gallons of Paint to be Purchased	Total Cost for Quarts of Paint to be Purchased	Total Cost of Paint for the Room
Living Room			
Kitchen			
Bedroom			

- B.** What is the total cost for all three rooms rounded to the nearest tenth?
- C.** Write the cost of paint in word form as if you are writing the check for the paint?

Task/Question 4:

- A.** Painting takes you $\frac{3}{4}$ hour to paint one wall. It takes your brother $\frac{1}{3}$ of the time it takes you to paint a wall. How long will it take your brother to paint 4 walls? Explain your mathematical thinking with words and numbers or draw a visual representation showing your answer.
- B.** The living room, the kitchen and bedroom have a total of 12 walls. You and your brother agreed that each of you will paint 6 walls. How long will it take you and your brother to paint the twelve walls? Don't forget your Grandma wants a second coat on each wall. Show your work.
- C.** Your Grandma wants to pay you and your brother for painting her house. Develop a plan for the amount you should be paid. Justify your answer with facts and figures.



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