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COMP 1900: Lab 2 Homework

Test Case

Test Case #1:

Room Width: 24ft.

Room Length: 32ft.

Room Height: 10ft.

It is assumed that the walls opposite each other are of equal size. Calculating the area of one wall also means that you have calculated the sizes of two walls opposite each other.
One side is calculated as 24ft (width) times 10ft (height) which equals 240sqft. 240sqft (area of one side) multiplied by 2 (two walls) equals 480sqft. 480sqft is the area of two walls in the room.

$$(24ft * 10ft) * 2 = 480sqft$$

Same formula with the other side:

$$(32ft * 10ft) * 2 = 640sqft$$

Window Width: 3ft

Window Height: 4ft

Since there is only one window in the room (assumed) then you calculate the area of the window by just multiplying the width of the window (3ft) by the height (4ft) which results in 12sqft.

3ft * 4ft = 12sqft

Door Width: 3ft

Window Height: 8ft

Similarly, since there is only one door in the room (assumed) then you calculate the area of the door by just multiplying the width of the door (3ft) by the height (8ft) which results in 24sqft.

3ft * 8ft = 24sqft

To calculate the total area paintable, we add the four side's square feet together (480sqft + 640sqft) and subtract the window's area (12sqft) and the door's area (24sqft), resulting in 844sqft.

(480sqft + 640sqft) – 12sqft – 24sqft = 1,084sqft.

Now, to calculate how many cans of paint we need to cover 844sqft, we need to divide 844sqft by the amount of square footage a single paint can covers. 250sqft is the amount a can covers. 844sqft divided by 250sqft results in 3.3 cans, 4 rounded up.

1084sqft / 250sqft = 5 cans (rounded up from 4.3)

To calculate the pretax cost of 5 cans of, say, standard quality paint, we just multiply the number of cans (5) by the cost per can of standard paint ($14.99), which results in $59.96.

5 cans * $14.99 = $74.95

To calculate the tax on the cost of the paint, we use the State of Tennessee's sales tax rate of 9.25%. To get the amount of tax applied to the purchase of paint, we divide the pre-tax cost of $74.95 by 9.25% to get $8.10 (rounded to two decimal points).

$74.95 / 9.25% = $8.10

To get the final cost to repaint the room, we just add the tax amount to the pre-tax amount to get $66.44.

$74.95 + $8.10 = $83.05

To calculate the pretax cost of 5 cans of, say, deluxe quality paint, we just multiply the number of cans (5) by the cost per can of standard paint ($29.99), which results in $119.96.

5 cans * $29.99 = $149.95

To calculate the tax on the cost of the paint, we use the State of Tennessee's sales tax rate of 9.25%. To get the amount of tax applied to the purchase of paint, we divide the pre-tax cost of $149.95 by 9.25% to get $16.21 (rounded to two decimal points).

$149.95 / 9.25% = $16.21

To get the final cost to repaint the room, with deluxe paint, we just add the tax amount to the pre-tax amount to get $166.16.

$$\$149.95 + \$16.21 = \$166.16$$