

MATHCOUNTS[®] Problem of the Week Archive

Spring Blossoms – April 4, 2022

Problems & Solutions

Marta recently started her own flower business. It was necessary for Marta to purchase supplies for planting and growing flowers. First, she purchased marigold seeds and peony seeds for \$2.00 and \$3.90, respectively. Then Marta bought bulbs for lilies and dahlias for \$21.96 and \$20.64, respectively. Finally, she purchased three bags of garden soil for \$5.19 per bag.



Marta found that she also needed some materials for creating the floral arrangements she would be selling. She ordered a dozen small, ceramic pots for \$40.00, a pack of plastic bags for \$5.99 and a roll of twine for \$4.75. Marta spent no additional money, since she already owned much of what was necessary to start her business, and the remainder came from in-kind gifts from area merchants. What was Marta's total up-front cost to start her business? Express your answer to the nearest hundredth.

On planting and growing supplies Marta spent $2.00 + 3.90 + 21.96 + 20.64 + 3(5.19) = \64.07 . For floral arrangement materials, Marta spent $40.00 + 5.99 + 4.75 = \$50.74$. Therefore, Marta's total up-front cost to start her business was $64.07 + 50.74 = \$114.81$.

What percentage of Marta's total up-front cost is attributed to the purchase of supplies for planting and growing flowers? Express your answer as a percent to the nearest tenth.

From the previous problem, we found that the total amount Marta spent on supplies and materials to start her business was \$114.81. On planting and growing supplies, she spent \$64.07. Therefore, the supplies purchased for planting and growing flowers account for $64.07/114.81 = 0.5580524345 \approx 55.8\%$ of Marta's total up-front cost.

In her first six months of operation, Marta sold 3 mixed bouquets for \$13 each, 4 bouquets of lilies for \$15 each, and 5 bouquets of dahlias for \$12 each. She also sold 5 potted arrangements of marigolds and peonies for \$8 each. If Marta's business operates in a jurisdiction that has no sales tax, what was Marta's total revenue for the first six months her business was operational?

Marta earned a total of $13(3) = \$39$ for the mixed bouquets. For the lily bouquets, she earned $15(4) = \$60$. For the dahlia bouquets, she earned $12(5) = \$60$. Finally, for the potted arrangements, Marta earned $5(8) = \$40$. That means in the first six months Marta's business was operational, she earned $39 + 60 + 60 + 40 = \$199$.

Assuming Marta's business incurred no additional costs, what was Marta's profit after her first six months in business? Express your answer to the nearest hundredth.

To determine Marta's profit, we must subtract her total cost from the total combined income after the first six months. Therefore, Marta's profit was $199 - 114.81 = \mathbf{\$84.19}$.

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