

# MATHCOUNTS<sup>®</sup> 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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### ***Problems***

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