

# MATHCOUNTS<sup>®</sup> Problem of the Week Archive

## Summer Camp – June 6, 2022

### Problems & Solutions

Summer Fun Camp enrollment costs 85 dollars each week per camper. Each camper may register for up to three of the optional workshops offered for an additional charge of \$5.50 a week per workshop, or 15 dollars per week for three workshops. The total charge for Chloe's enrollment to attend Summer Fun Camp for  $n$  weeks this summer is 768 dollars. If Chloe has registered to participate in two workshops each week, what is the value of  $n$ ?

*The cost to attend Summer Fun Camp for  $n$  weeks is  $85n$  dollars. To also participate in two workshops each week at \$5.50 a week per workshop for a total of  $n$  weeks costs an additional  $2(5.50)n$  dollars. If Chloe's total charge was 768 dollars, we have the following:  $85n + 11n = 768 \rightarrow 96n = 768 \rightarrow n = 8$ . Chloe has enrolled to attend Summer Fun Camp for 8 weeks.*

This summer, Lailan will attend Summer Fun Camp for six weeks and participate in the soccer, band and cheerleading workshops. If Lailan registered to participate in these three workshops each week, what is her total charge for six weeks of Summer Fun Camp and workshops?

*The cost to attend Summer Fun Camp for six weeks is  $85 \times 6 = 510$  dollars. To participate in three workshops each week at 15 dollars per week for a total of six weeks costs an additional  $15 \times 6 = 90$  dollars. So, Lailan's total charge for six weeks of Summer Fun Camp and workshops is  $510 + 90 = 600$  dollars.*

This summer, Ailee plans to attend three different camps – a two-week soccer camp, followed by a two-week band camp, followed by a two-week cheerleading camp. The total cost for Ailee's band camp enrollment is 100 dollars more than the total cost of her soccer camp enrollment, and the total cost of her cheerleading camp enrollment is one-fourth the combined total costs for her enrollment in all three camps. If the combined total costs for Ailee's enrollment in all three camps is equal to Lailan's total charge for six weeks of Summer Fun Camp and workshops, what is the total cost of Ailee's band camp enrollment?

*Let the cost for Ailee to attend two weeks of soccer camp, two weeks of band camp and two weeks of cheerleading camp be represented by  $s$ ,  $b$  and  $c$ , respectively. From the information provided, we can derive the following equations:  $b = s + 100$ ,  $c = (1/4)(s + b + c)$  and  $s + b + c = 600$ . If we rewrite the second equation as  $4c = s + b + c$ , we have two quantities that both equal  $s + b + c$ . If we set those quantities equal to each other and solve, we get  $4c = 600 \rightarrow c = 150$  dollars. That means that  $s + b = 600 - 150 \rightarrow s + b = 450$ , and  $b = s + 100 \rightarrow -s + b = 100$ . Adding  $s + b = 450$  and  $-s + b = 100$  yields  $2b = 550 \rightarrow b = 275$ . Thus, the total cost of Ailee's band camp enrollment is **275** dollars.*

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### ***Problems***

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This summer, Lailan will attend Summer Fun Camp for six weeks and participate in the soccer, band and cheerleading workshops. If Lailan registered to participate in these three workshops each week, what is her total charge for six weeks of Summer Fun Camp and workshops?

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