

MATHCOUNTS® Problem of the Week Archive

Mathopolis Snowfall – February 26, 2018

Problems & Solutions

The snowfall in Mathopolis totaled 68.1 inches in 2015 and 11.2 inches in 2017. If the average yearly snowfall for 2015, 2016 and 2017 was 35.6 inches, how many total inches of snow fell in Mathopolis in 2016? Express your answer as a decimal to the nearest tenth.

We are told that the total snowfall in Mathopolis in 2015 and 2017 was 68.1 inches and 11.2 inches, respectively. Combined, that's $68.1 + 11.2 = 79.3$ inches of snow. With an average yearly snowfall, from 2015 through 2017, of 35.6 inches, it follows that $(35.6 \times 3) - 79.3 = 106.8 - 79.3 = \mathbf{27.5}$ inches of snow fell in Mathopolis in 2016.

Based on the previous problem, what was the percent decrease in the total inches of snowfall in Mathopolis, from 2016 to 2017? Express your answer to the nearest tenth.

In the previous problem we were told that the total snowfall in Mathopolis in 2017 was 11.2 inches, and we determined that the total snowfall in 2016 was 27.5 inches. Therefore, the percent decrease in the total inches of snowfall in Mathopolis, from 2016 to 2017 was $(27.5 - 11.2)/27.5 = 16.4/27.5 = 0.59272727\dots \approx \mathbf{59.3\%}$.

Based on the previous problems, how many inches of snow are expected to fall in Mathopolis, in 2018 if the total inches of snowfall in Mathopolis is predicted to *increase* from 2017 to 2018 by the same percent that the total inches of snowfall decreased from 2016 to 2017? Express your answer as a decimal to the nearest tenth.

In the first problem, we were told that a total of 11.2 inches of snow fell in Mathopolis in 2017. From the previous problem, we determined that, from 2016 to 2017, the snowfall in Mathopolis decreased by 59.3%. So, it is predicted that the total snowfall will increase by 59.3% from 2017 to 2018. That means the total inches of snow expected to fall in Mathopolis in 2018 is $11.2 \times 1.593 = 17.8416 \approx \mathbf{17.8}$ inches.

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