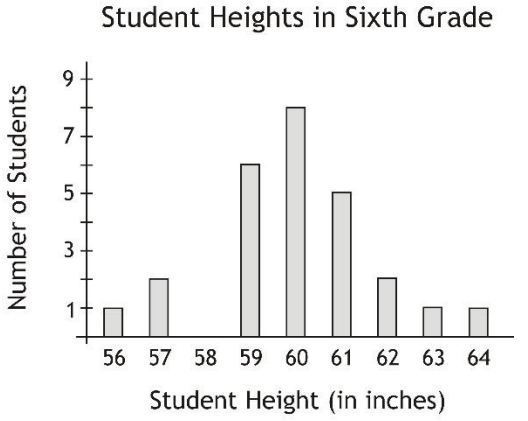
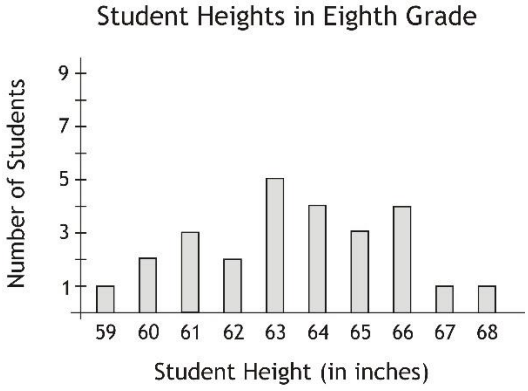
MATHCOUNTS® Problem of the Week Archive

Student Heights – August 16, 2021

Problems & Solutions





The graphs above show the heights of a class in sixth grade and the heights of that same class in eighth grade. Use the information in the graph to answer the following questions. Note: all heights are given to the nearest inch. What was the range of the class' heights in 6th grade?

*The tallest student in 6th grade was 64 inches, and the shortest was 56 inches. So, the range was 64 – 56 = **8** inches.*

What was the positive difference between the median and mean of their sixth grade heights?

*The median is the middle height when the heights are placed in order from least to greatest, but since there are an even number of numbers, the median will be the average of the two middle numbers. Thus, the median is (60 + 60)/2 = 60 inches. The mean of the heights is (56 + 57 + 57 + 59 + 59 + 59 + 59 + 59 + 59 + 60 + 60 + 60 + 60 + 60 + 60 + 60 + 60 + 61 + 61 + 61 + 61 + 61 + 62 + 62 + 63 + 64)/26 = 60 inches. So, the difference between the median and the mean is 60 – 60 = **0** inches.*

By what percent did the average height increase from sixth grade to eighth grade? Express your answer as a decimal to the nearest tenth.

We established that the average (or mean) of the class in sixth grade was 60 inches. The average of the class in eighth grade was (59 + 60 + 60 + 61 + 61 + 61 + 62 + 62 + 63 + 63 + 63 + 63 + 63 + 64 + 64 + 64 + 64 + 65 + 65 + 65 + 66 + 66 + 66 + 66 + 67 + 68)/26 = 63.5 inches. Thus, the percent increase from sixth to eighth grade was [(63.5 – 60)/60](100) = ***5.8****%, to the nearest tenth.*

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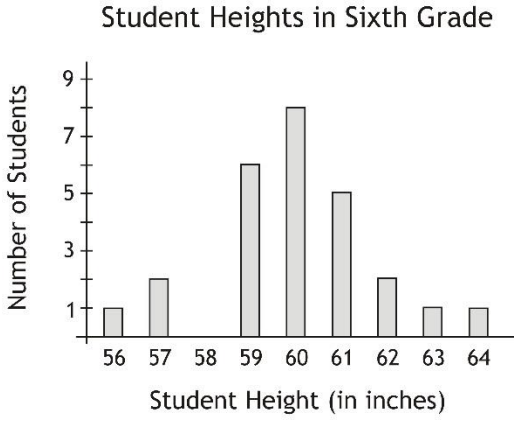

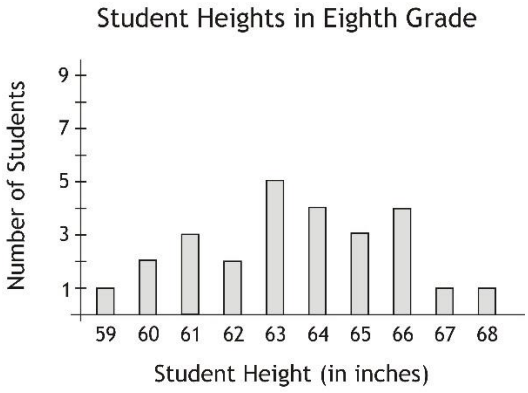

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What was the positive difference between the median and mean of their sixth grade heights?

By what percent did the average height increase from sixth grade to eighth grade? Express your answer as a decimal to the nearest tenth.