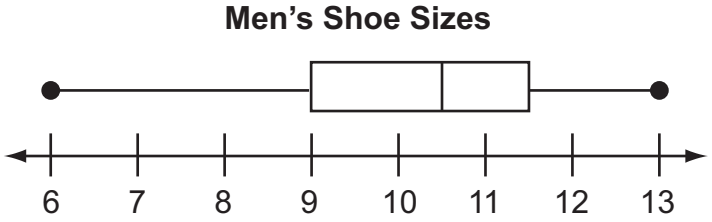
PSSA and Keystone Exams
Summer 2023 Workshops

PSSA, Grade 6 Math

Men's Shoe Sizes

Handscoring
Anchor Set

1. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

1. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Grade 6 Math
Men's Shoe Sizes

Assessment Anchor this item will be reported under:

M06.D-S.1 Demonstrate understanding of statistical variability by summarizing and describing distributions.

Specific Anchor Descriptor addressed by this item:

M06.D-S.1.1 Display, analyze, and summarize numerical data sets in relation to their context.

Scoring Guide:

Score	In this item, the student –
4	Demonstrates a thorough understanding of statistical variability by correctly solving problems and clearly explaining procedures.
3	Demonstrates a general understanding of statistical variability by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	Demonstrates a partial understanding of statistical variability by correctly performing a significant portion of the required task.
1	Demonstrates minimal understanding of statistical variability.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.

Top Scoring Student Response And Training Notes:

Score	Description
4	Student earns 4 points.
3	Student earns 3.0 – 3.5 points.
2	Student earns 2.0 – 2.5 points.
1	Student earns 0.5 - 1.5 points. OR Student demonstrates minimal understanding of statistical variability.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

A.

What?	Why?
(size) $10\frac{1}{2}$	**Sample Explanation:** In a box-and-whisker plot, the line inside the box represents the median.

(2 score points)

1 point for correct answer

1 point for complete explanation

OR ½ point for correct but incomplete explanation

B.

What?	Why?
10 (men)	**Sample Explanation:** The first whisker represents the 1st quartile and the second whisker represents the 4th quartile. Each quartile represents ¼ of the total number of males. Since there are 40 males surveyed, each quartile represents 10 males.

(2 score points)

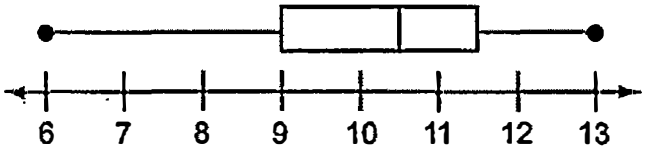
1 point for correct answer

1 point for complete explanation

OR ½ point for correct but incomplete explanation

74. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.

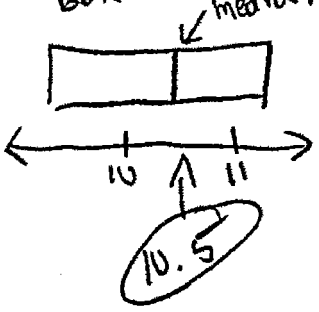
Men's Shoe Sizes



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

Show

Simple diagram of the box



Explain

The median shoe size is $10\frac{1}{2}$. I know because the line inside the box represents where the median is (also known as the second quartile). I saw that the median line is above the space between 10 and 11 on the number line. Therefore, the median is 10.5.

74. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

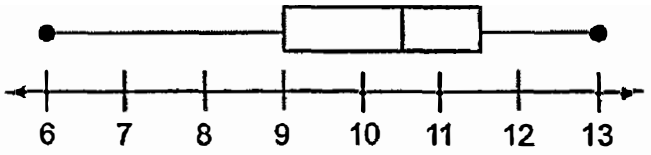
B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Show	explain
$40 \cdot \frac{1}{4} = 10$	Martin is not correct. The number of men who have shoe sizes from 6-9 and $11\frac{1}{2}$-13 are the same. I know because the whisker from 6-9 shows the lower quarter of the data set while the whisker from $11\frac{1}{2}$-13 show the greater quarter of the numbers in the set of data. The whiskers both represent $\frac{1}{4}$ of the data. The number of men represented by the whisker from 6-9 is 10 men. The whisker from $11\frac{1}{2}$-13 is 10 men. The box from the 1st quartile to the median is 10 men. And the box from the median to the 3rd quartile it 10 men. I know because each part show $\frac{1}{4}$ of 40 and $\frac{1}{4}$ of 40 is 10.

A2

74. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.

Men's Shoe Sizes



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median shoe size of the 40 men Carlos surveyed is $10\frac{1}{2}$. I found out my answer by looking at the box and whisker plot. I know that on a box and whisker plot, the line inside the box shows the median.

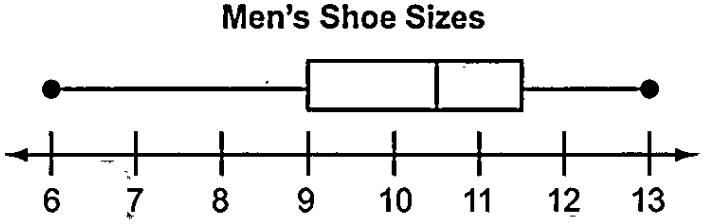
74. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct. There are ten men in each interval. I found those out by doing $40 \div 4 = 10$ since there were 40 men and there were 4 intervals. The line from 6 to 9 may be larger but that means it has a bigger range of shoe sizes. The line from $11\frac{1}{2}$ to 13 means there is a smaller range but more people have the same shoe size.

25. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median of the shoe sizes of the 40 men Carlos surveyed is 10 1/2 (10.5). I know this because on the box and whisker plot, halfway through, the second quartile is 10 1/2.

25. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

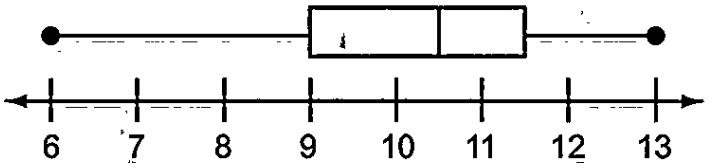
B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because on the box and whisker plot, between 6-9 is 25% and between 11 1/2 and 13 is also 25%.

The number of men in each interval is (40 X .25) 10 men.

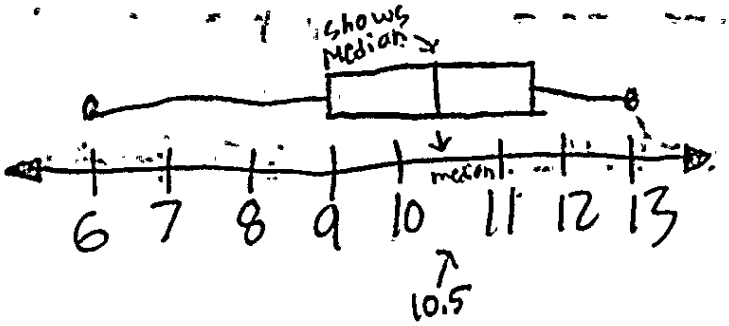
25. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.

Men's Shoe Sizes



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The Median shoe size of the 40 men carlos surveyed was 10.5. I know that because I know there are three lines and two dots on a box-and-whisker plot, so I know that the middle line shows the median. And on the number line the median point was pointing in between the 10 and the 11, so I know 10.5 is in between 10 and 11. And that means 10.5 is the median shoe size of the 40 men carlos surveyed.



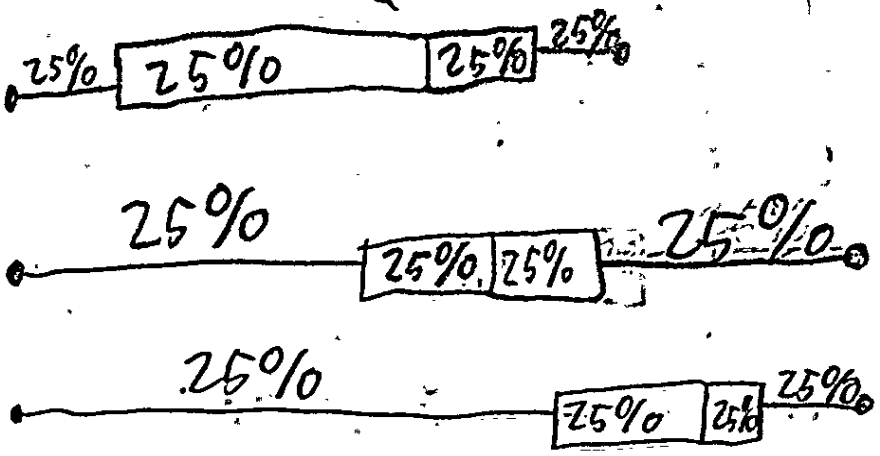
25. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

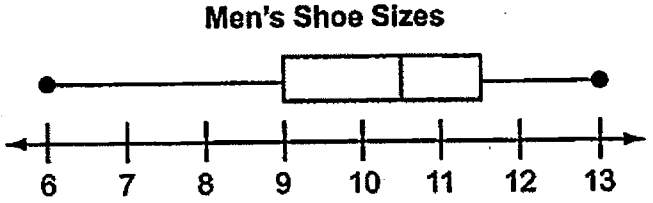
B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

I know Martin is not correct because each part of the whisker plot is equal to 25% so, Even though 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13, they are both equal to 25%. It doesn't matter how long the whisker is because all is equal to 25%.

Examples:



74. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the median shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

10½

I found my answer by looking at the plot and the line was in the middle of box meant thats were the median is and it's inbetween 10 and 11 so I Thought It would be 10½.

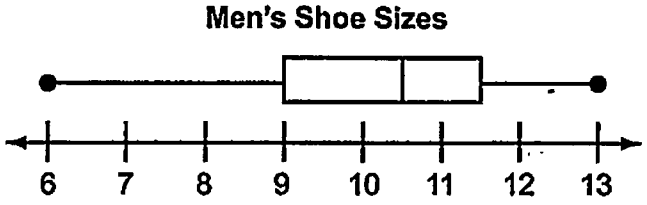
74. ***Continued.*** **Please refer to the previous page for task explanation.**

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because the box means the most common shoe sizes So the line has to be shorter from 11 1/2 to 13 because the box is there

25. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the median shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median shoe size of the 40 men Carlos surveyed, is 10.$\frac{1}{2}$. I determined the median by finding the line that was 'in between' the upper quartile of 11$\frac{1}{2}$, and the lower quartile of nine. The line that seperates those two is the median. I measured up that line to the graph and found the median of 10$\frac{1}{2}$.

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25. ***Continued.*** Please refer to the previous page for task explanation.

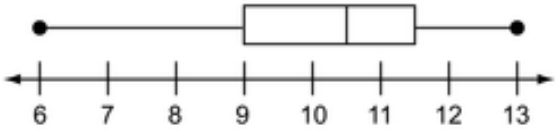
Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because the median is the middle number. The middle number is 10½. The range of 6-9 still is less than the median so that must mean that 11½ to 13 has more men wearing those shoes. The median would most likely be the 19th and 20th number combined than divided to get the median. The lower extreme is 6 because that is the lowest dot on the graph, the upper extreme is 13 because that is the highest point of the graph. The lower quartile is 9 because the line before the median line is at 9. The upper quartile is 11½ because the line after the median reaches 11½.

Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.

Men's Shoe Sizes



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median shoe size of 40 men is 10.5. The median is 10.5 because the line that shows the middle is right inbetween the 10 and the 11.

135 / 1000

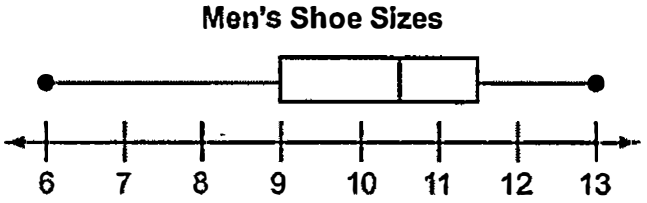
Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because each quanity is 25%, it does not matter how long the line is. It will always be 25%. In each intervolt there is 10 shoe sizes. I found this by doing $40 + 4 = 10$ beacuse there are four quanities and 40 men where surveyed. There are 10 shoe sizes in each of the quanities

295 / 1000

74. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the median shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

$10\frac{1}{2}$ there is a box above 9, 10, 11 and there's a line and I brought it straight down to $10\frac{1}{2}$.

74. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because more men are in sizes like 9, 10, 11, 12, and 13 because of that box above.

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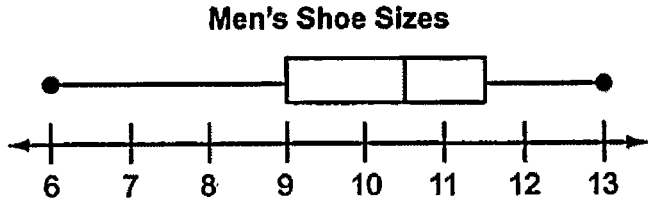


A. What was the median shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median shoe size of the 40 men was 10 and $\frac{1}{2}$. I found this by minimizing the numbers until it came to the middle.

74. ***Continued.*** **Please refer to the previous page for task explanation.**

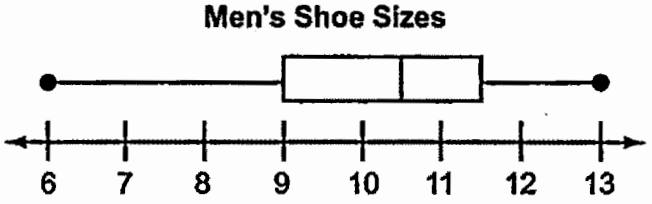
Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Matin is not correct because he looked at the wrang numbers. The interval of the mens shoe size was a half of every number, like in between 9 and 10, it would be $9\frac{1}{2}$. I found that by thinking what would be in between 9-10, $9\frac{1}{2}$.

A10

74. Carlos surveyed 40 men about their shoe sizes. Carlos made the box-and-whisker plot below to display his results.



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

First I got all my numbers in orders. from when I gathered my numbers from what each line was pointing to. I got 6, 9, 10.5, 11.5, 11.8, 13. Next I found the middle number which was 10.5.

6, 7, 9, 10.5, 11.8, 13

answer

10.5

74. ***Continued.*** **Please refer to the previous page for task explanation.**

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is **not** correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because the greater it is the more people have it. The number of men with shoe sizes in each interval is 5. I took the number of men he tested, 40, and by how many numbers their was on the box-and-whisker plot, 8, and I got 5.

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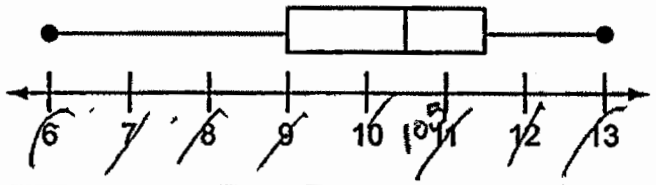
Men's Shoe Sizes



A. What was the **median** shoe size of the 40 men Carlos surveyed? Explain how you found your answer. 9.5 I crossed them out

74. ***Continued.*** Please refer to the previous page for task explanation.

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers. hes wrong because the nubers after 9 are bigger.

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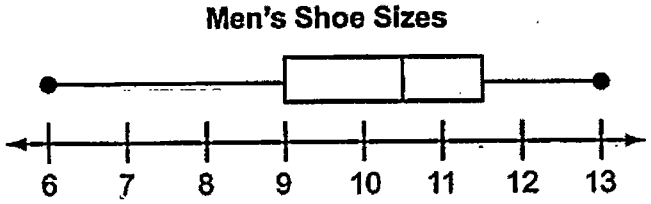

A. What was the median shoe size of the 40 men Carlos surveyed? Explain how you found your answer.

The median is 9.
I found out the median by first, writing all the chosen numbers by least to greatest. Then I found out the middle number was 9.
Thats how I found the median.

74. ***Continued.*** **Please refer to the previous page for task explanation.**

Martin thinks more men have shoe sizes between 6 and 9 than between $11\frac{1}{2}$ and 13 because the whisker from 6 to 9 is longer than the whisker from $11\frac{1}{2}$ to 13.

B. Explain why Martin is not correct. As part of your explanation, find the number of men with shoe sizes in each interval and describe how you found those numbers.

Martin is not correct because the whisker from 6 to 9 has more options than the whisker from 11½ to 13. Number 6 has 6, number 7 has 6, number 8 has 6, and number 9 has 7. Number 11½ has 5, number 12 has 5, and number 13 has 5. I found these numbers by placing 5 in each. There were 5 extra, so I added them to whisker 6-9 because there were more options.