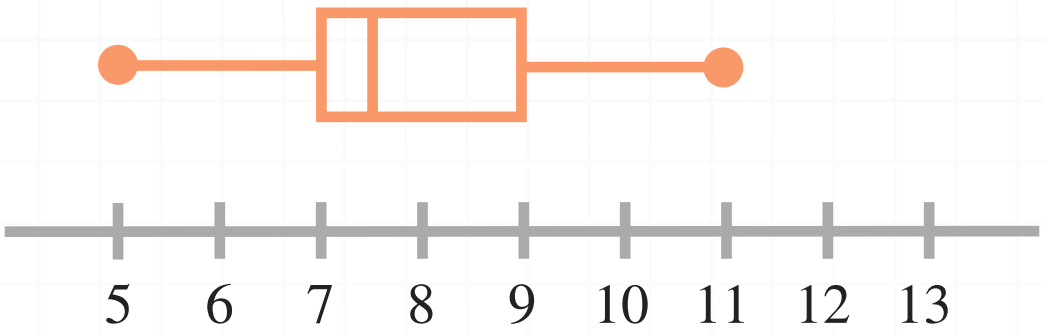
Topic: Box-and-whisker plots

Question: The box plot shows the number of hours slept on vacation. What is the median of the data?



Answer choices:

A 2

B 6

C 7.5

D 8.5

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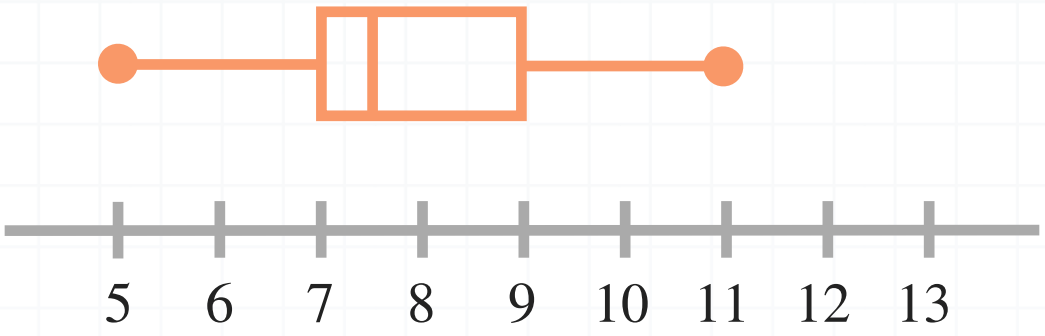
Solution: C

The median of a box-and-whisker plot is the line inside of the box.



Since that line is sitting between 7 and 8, answer choice C of 7.5 can be the only correct choice.

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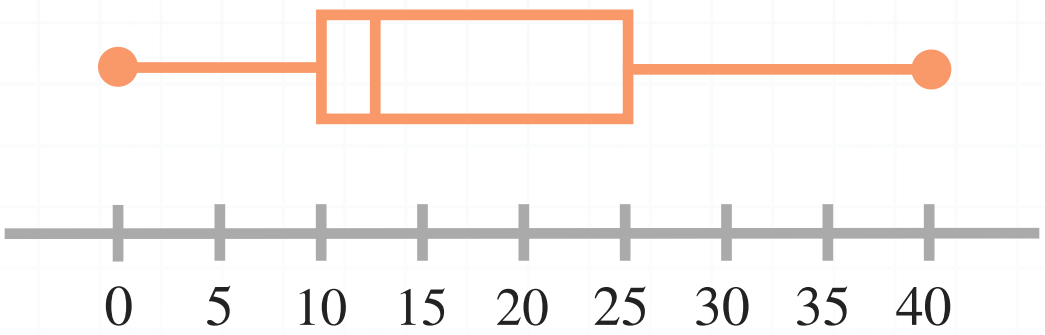
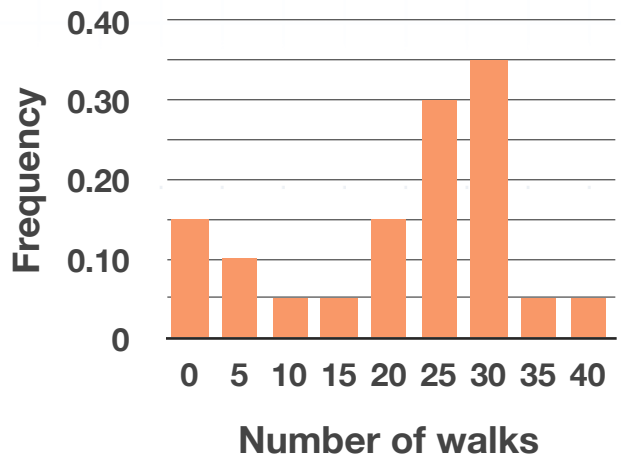
Question: A dog walking business is keeping track of how many times each of its clients uses their business in the month of December. Which histogram matches the box plot?

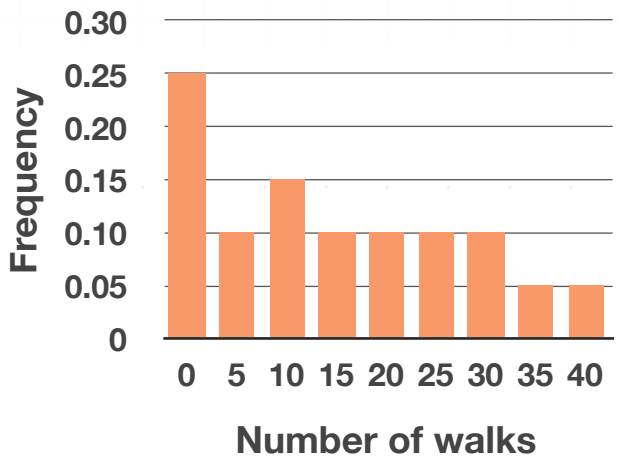


Answer choices:

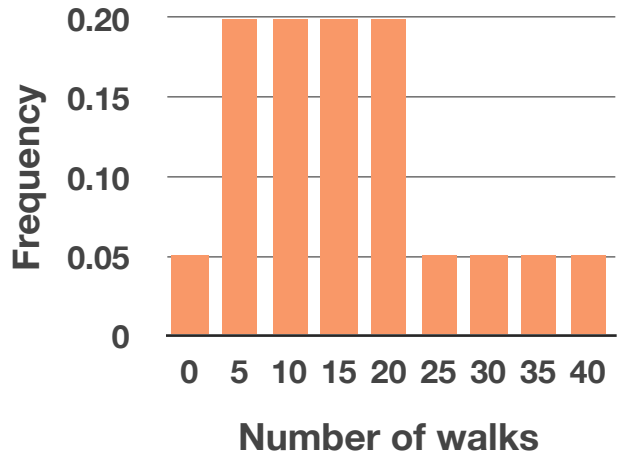
A



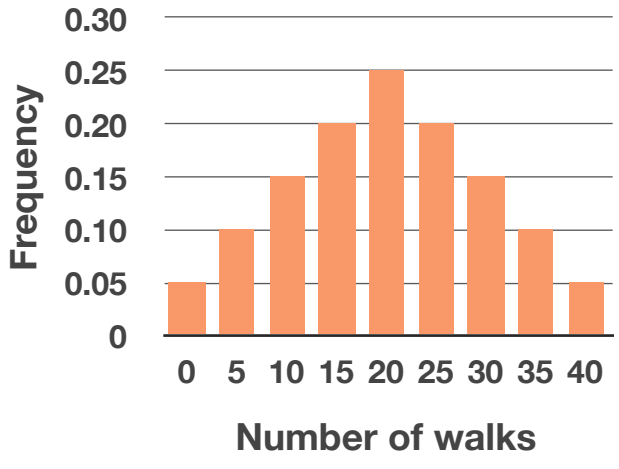
C



B



D



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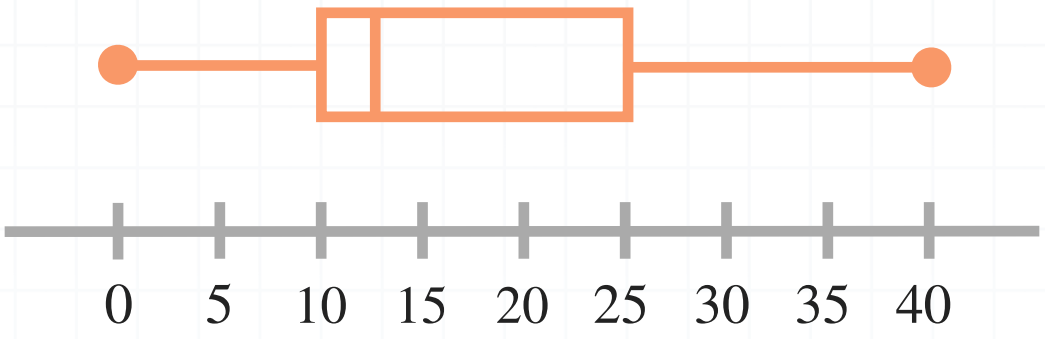
Solution: C

A box-and-whisker plot is divided into percentiles. $25\,\%$ of the data is in each section. Based on the box-and-whisker plot,



about

$25\,\%$ of the data falls in the range $0 - 10$,

$25\,\%$ of the data falls in the range $10 - 12.5$,

$25\,\%$ of the data falls in the range $12.5 - 25$,

$25\,\%$ of the data falls in the range $25 - 40$.

The only histogram that matches this distribution is

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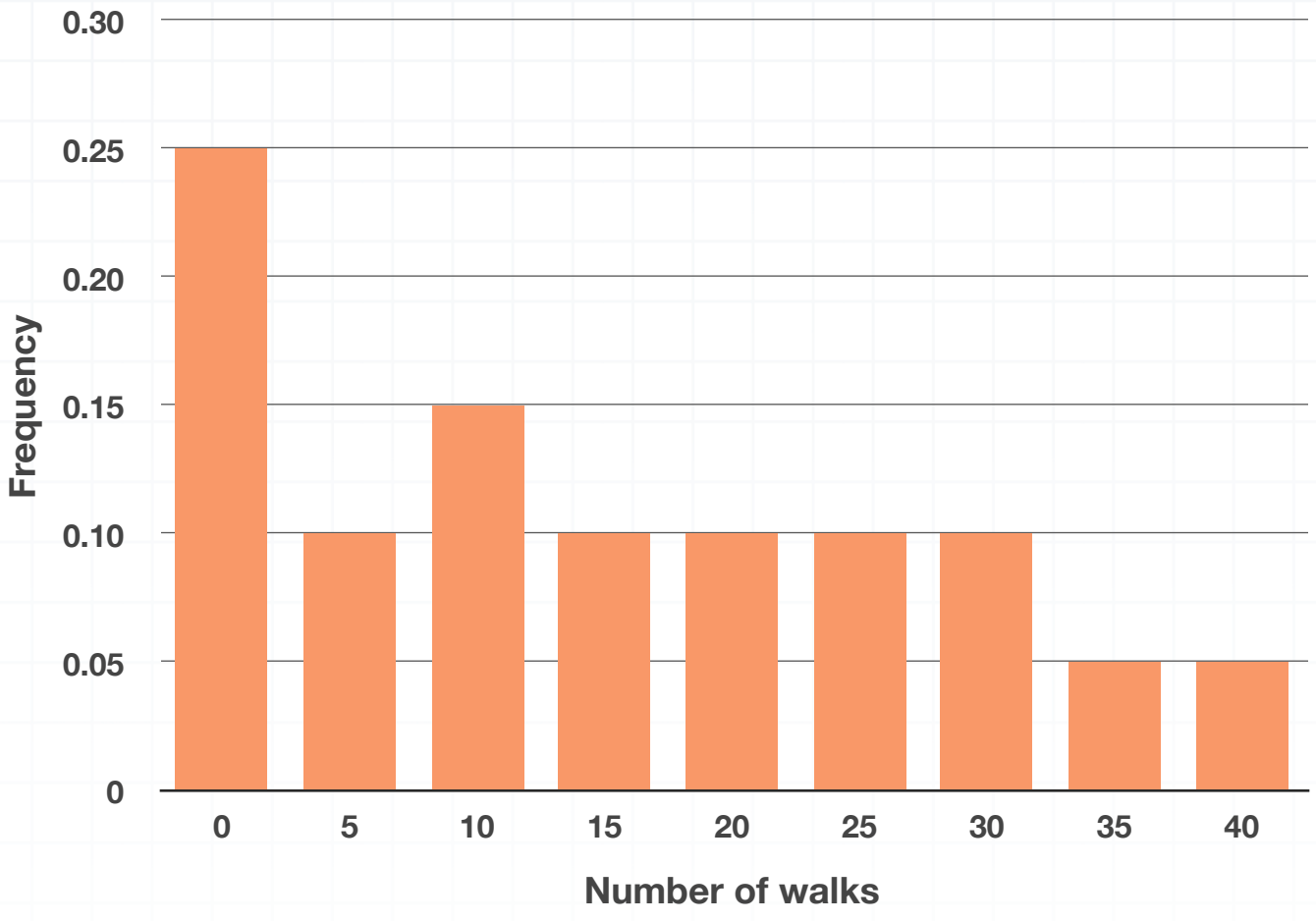
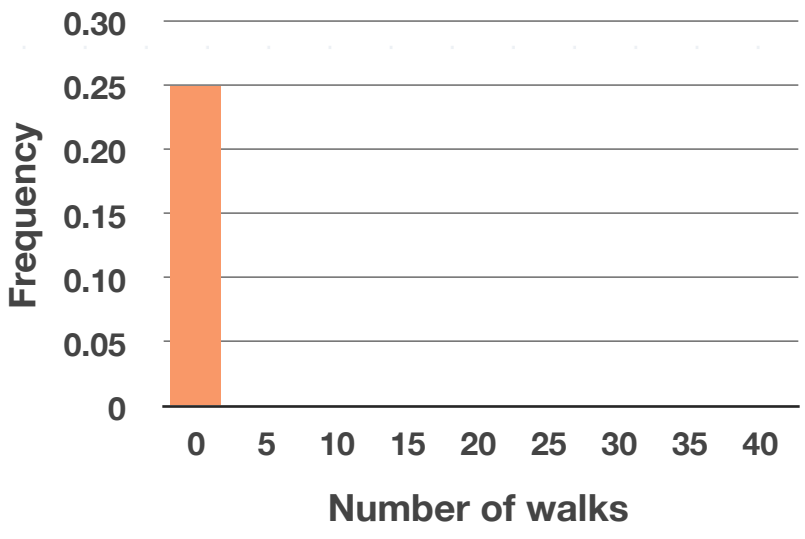


In this histogram,

roughly $25\,\%$ of the data is at 0 or close to it, since the first bar has a frequency of 0.25:



roughly $25\,\%$ of the data is between 5 and 10, since the second two bars have a frequency together of $0.10 + 0.15 = 0.25$:

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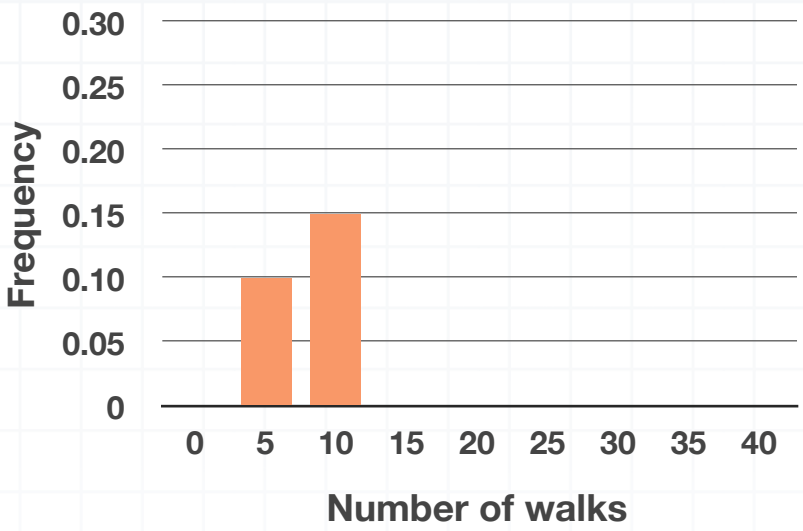
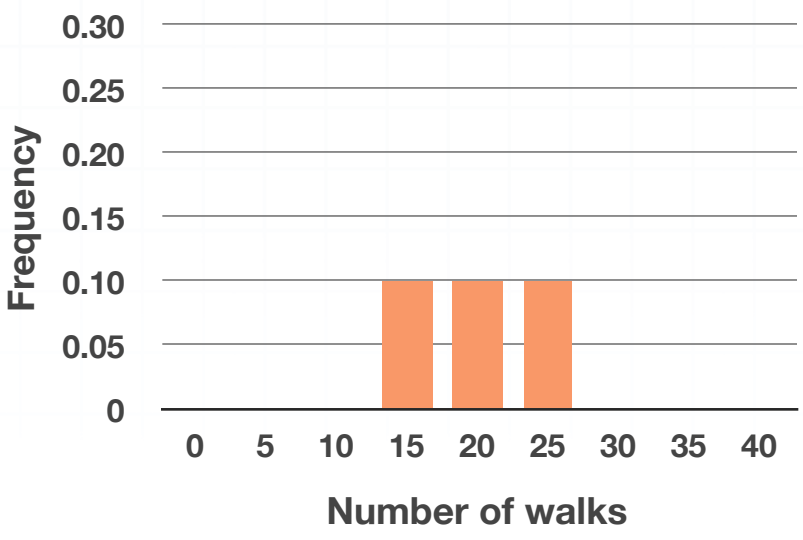
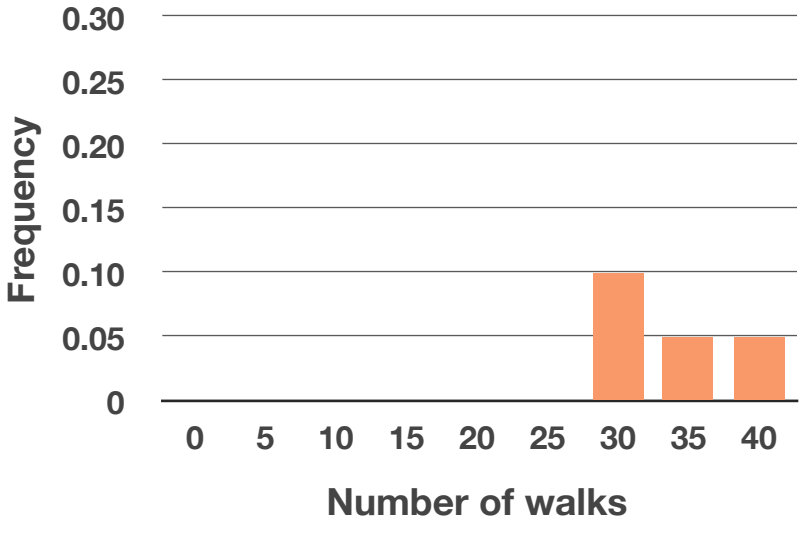


roughly $25\,\%$ of the data is between 15 and 25, since the next four bars have a frequency together of $0.10 + 0.10 + 0.10 = 0.30$:



roughly $25\,\%$ of the data is between 25 and 40, since the last three bars have a frequency together of about $0.10 + 0.05 + 0.05 = 0.20$:



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Question: If the first quartile is equal to 15 and the third quartile is equal to 25, which statement is true?

Answer choices:

A The median is 20.

B The mean is between 15 and 25.

C Both statements are true.

D Both statements are false.

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Solution: D

If the first quartile is equal to 15 and the third quartile is equal to 25, you know the median is between 15 and 25. But you can't determine its exact value. The mean could be larger than 25 or smaller than 15 if there was an extreme outlier in the data set.

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