

Topic: Building histograms from data sets

Question: If we divide the data set into 6 classes, what will be the class width?

12, 7, 9, 5, 8, 17, 28, 31, 17, 25, 13, 14, 6, 2, 20, 39, 45, 16, 33, 28

Answer choices:

- A 6
- B 7
- C 8
- D 9



Solution: C

First, we need to put the data points in ascending order,

2, 5, 6, 7, 8, 9, 12, 13, 14, 16, 17, 17, 20, 25, 28, 28, 31, 33, 39, 45

so that we can calculate the range.

$$\text{Range} = 45 - 2 = 43$$

Now we divide the range by the number of classes in order to find the class width.

$$\frac{43}{6} \approx 7.2$$

Since we have to round up to the nearest integer (rounding down would mean that we wouldn't be able to span the entire data set), the class width will be 8.



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Question: When constructing a histogram from the data set, which class interval will have the largest frequency if we use 6 classes?

12, 7, 9, 5, 8, 17, 28, 31, 17, 25, 13, 14, 6, 2, 20, 39, 45, 16, 33, 28

Answer choices:

- A 0 – 7
- B 8 – 15
- C 16 – 23
- D 32 – 39



Solution: B

Put the data in ascending order.

2, 5, 6, 7, 8, 9, 12, 13, 14, 16, 17, 17, 20, 25, 28, 28, 31, 33, 39, 45

Then the range is $45 - 2 = 43$. Divide the range by the number of classes to find the class width.

$$\frac{43}{6} \approx 7.2$$

We have to round up, so the class width will be 8. The smallest data value is 2, so we can start the first interval from 0, and the class intervals will be

Class interval	Frequency
0 - 7	4
8 - 15	5
16 - 23	4
24 - 31	4
32 - 39	2
40 - 47	1

Therefore, the class interval with the largest frequency will be 8 – 15.

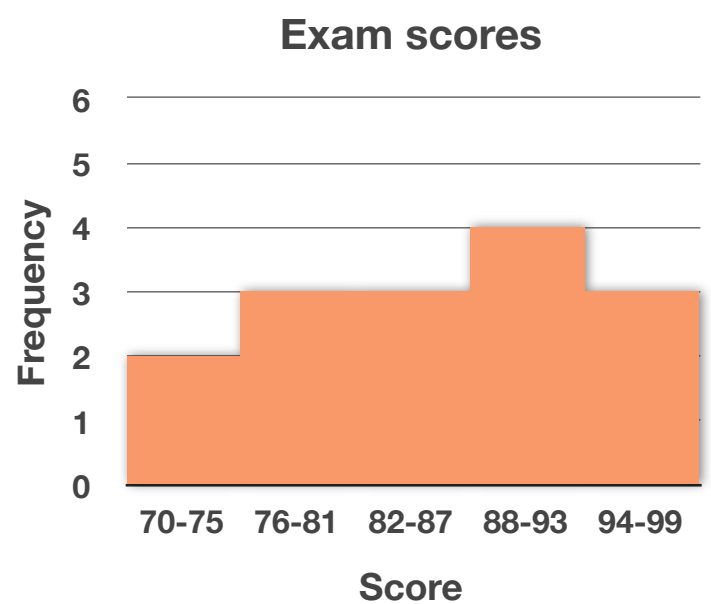
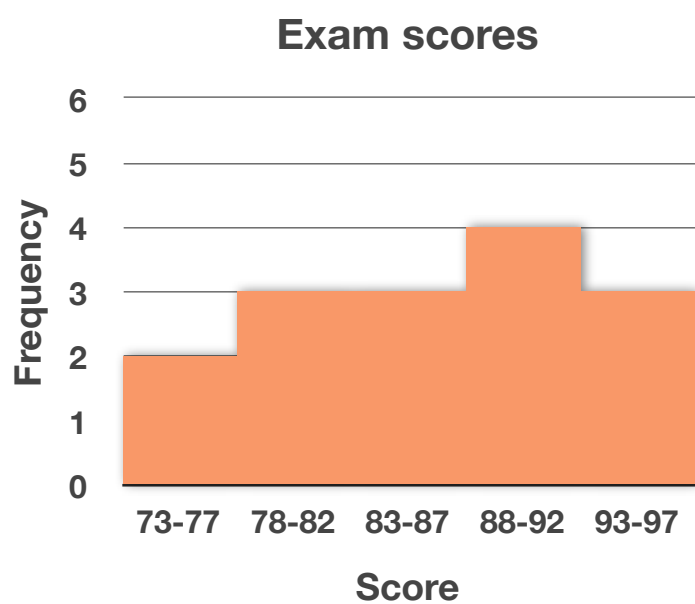
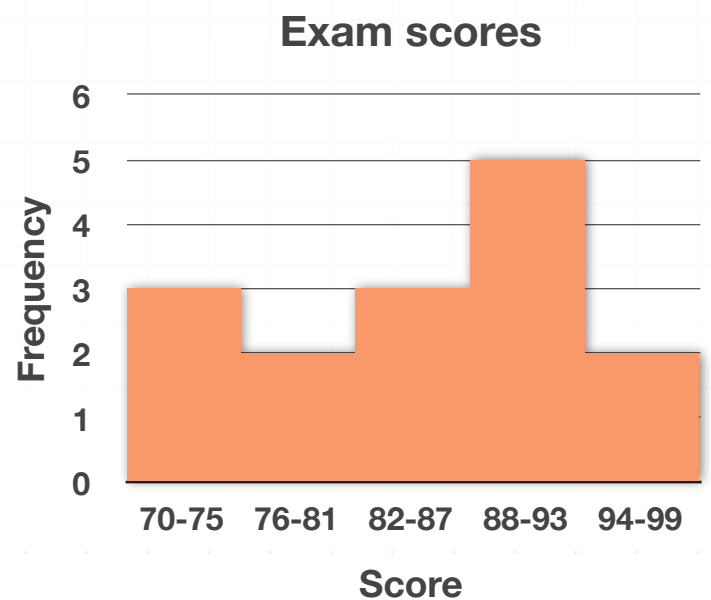
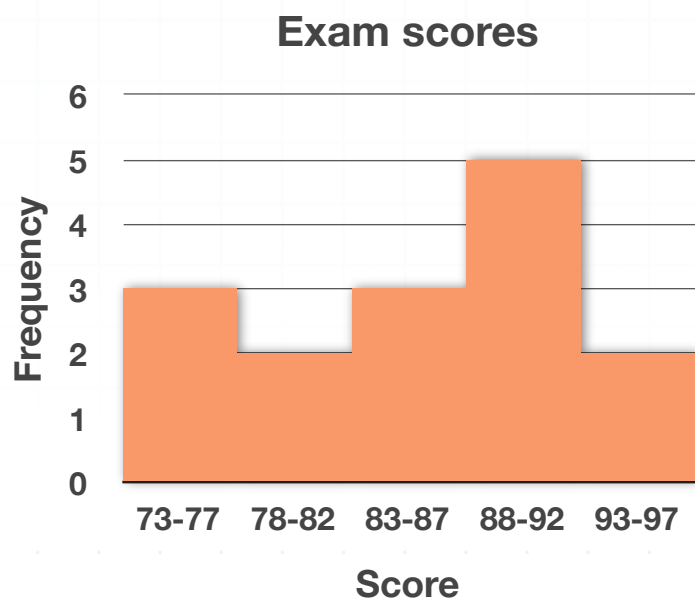


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Question: The exam scores for 15 students are listed below. If we want to use 5 bins to organize the data, which chart is the correct histogram?

85, 91, 94, 74, 88, 98, 83, 73, 86, 89, 93, 80, 77, 79, 95

Answer choices:



Solution: D

Put the data points in ascending order,

73, 74, 77, 79, 80, 83, 85, 86, 88, 89, 91, 93, 94, 95, 98

and calculate the range.

$$98 - 73 = 25$$

To find class width, divide the range by the number of classes.

$$\frac{25}{5} = 5$$

But if we use this class width, we'll fall just short of including the complete range of the data. So to make sure we include the smallest and largest values, we'll use a class width of 6.

Now we can set up the class intervals and count their respective frequencies.

Class interval	Frequency
70 - 75	2
76 - 81	3
82 - 87	3
88 - 93	4
94 - 99	3

Now we can sketch the histogram.



