

# Histograms and Data Displays

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 30

## Quick Review and Helpful Hints

A *histogram* groups data into equal intervals (bins) and uses bars to show the *frequency* (count) in each. The bars *touch* because the data is continuous, unlike a bar graph of separate categories. The tallest bar marks the most common interval.

▷ **Example:** A histogram bar for 10–19 has height 5 and for 20–29 has height 8. Which interval is more common? **Work:** Compare the heights: 5 versus 8. The taller bar is more common. ★ **Answer:** 20–29



Bars touch; height = frequency.

### Practice Problems

Use the table 0–9: 3, 10–19: 7, 20–29: 5, 30–39: 2.

- |  |  |
|--|--|
| <p>1. Frequency of 10–19 _____</p> <p>2. Most common interval _____</p> <p>3. Least common interval _____</p> <p>4. Total data values _____</p> <p>5. Frequency of 0–9 _____</p> <p>6. How many are 20 or more? _____</p> <p>7. How many are below 20? _____</p> | <p>8. Frequency of 30–39 _____</p> <p>9. Taller bar: 0–9 or 20–29? _____</p> <p>10. Combined 10–19 and 20–29 _____</p> <p>11. Do histogram bars touch? _____</p> <p>12. A histogram groups data into? _____</p> <p>13. A bar's height represents the? _____</p> <p>14. How many fewer in 30–39 than 10–19? _____</p> |
|--|--|

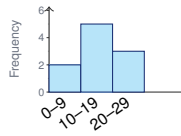
### Word Problems

15. In a histogram, the bar for ages 20–29 is tallest. What does that tell you? \_\_\_\_\_
16. A histogram has bins 0–9: 4 and 10–19: 6. What is the total so far? \_\_\_\_\_
17. Do the bars of a histogram have gaps between them? \_\_\_\_\_
18. What does the height of a histogram bar show? \_\_\_\_\_



**◆ Illustrated Practice**

Use each histogram. Bars touch because each bar represents an interval.



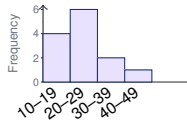
19. How many values are in 10–19? \_\_\_\_\_



25. Do histogram bars have gaps? \_\_\_\_\_



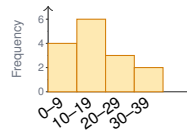
20. Which interval is most common? \_\_\_\_\_



26. Which interval is least common? \_\_\_\_\_



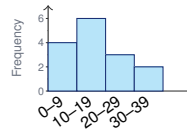
21. How many values are shown in all? \_\_\_\_\_



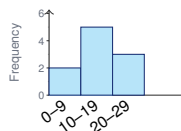
27. How many values are below 20? \_\_\_\_\_



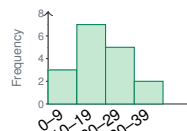
22. How many values are 20 or higher? \_\_\_\_\_



28. How many values are in 30–39? \_\_\_\_\_



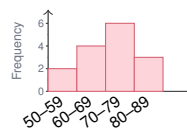
23. How many fewer are in 0–9 than 10–19? \_\_\_\_\_



29. How many values are in 10–29? \_\_\_\_\_



24. A bar has height 8. What does the height show? \_\_\_\_\_



30. Which score interval is most common? \_\_\_\_\_



## Answer Keys

- |                                       |   |  |
|---------------------------------------|---|--|
| 1. <input type="text" value="7"/>     | 11. <input type="text" value="Yes"/>                        | 21. <input type="text" value="14"/>        |
| 2. <input type="text" value="10–19"/> | 12. <input type="text" value="intervals"/>                  | 22. <input type="text" value="7"/>         |
| 3. <input type="text" value="30–39"/> | 13. <input type="text" value="frequency"/>                  | 23. <input type="text" value="3"/>         |
| 4. <input type="text" value="17"/>    | 14. <input type="text" value="5"/>                          | 24. <input type="text" value="frequency"/> |
| 5. <input type="text" value="3"/>     | 15. <input type="text" value="ages 20–29 are most common"/> | 25. <input type="text" value="No"/>        |
| 6. <input type="text" value="7"/>     | 16. <input type="text" value="10"/>                         | 26. <input type="text" value="40–49"/>     |
| 7. <input type="text" value="10"/>    | 17. <input type="text" value="No"/>                         | 27. <input type="text" value="10"/>        |
| 8. <input type="text" value="2"/>     | 18. <input type="text" value="frequency"/>                  | 28. <input type="text" value="2"/>         |
| 9. <input type="text" value="20–29"/> | 19. <input type="text" value="5"/>                          | 29. <input type="text" value="12"/>        |
| 10. <input type="text" value="12"/>   | 20. <input type="text" value="10–19"/>                      | 30. <input type="text" value="70–79"/>     |

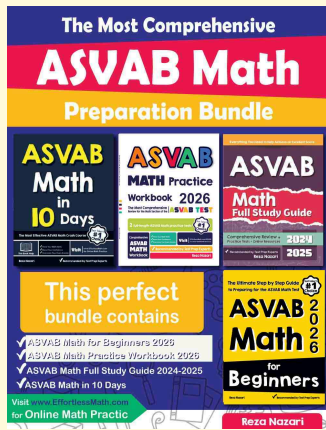
### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The table lists 7 for 10–19. So the final answer is 7.
2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The largest frequency is 7, at 10–19. So the final answer is 10–19.
3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The smallest frequency is 2, at 30–39. So the final answer is 30–39.
4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3 + 7 + 5 + 2 = 17$ . So the final answer is 17.
5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The table lists 3. So the final answer is 3.
6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5 + 2 = 7$ . So the final answer is 7.
7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3 + 7 = 10$ . So the final answer is 10.
8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The table lists 2. So the final answer is 2.
9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5 > 3$ , so 20–29 is taller. So the final answer is 20–29.
10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $7 + 5 = 12$ . So the final answer is 12.
11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Yes, because the data is continuous. So the final answer is Yes.
12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is It groups data into intervals (bins). So the final answer is intervals.
13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The bar height is the frequency (count). So the final answer is frequency.
14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $7 - 2 = 5$ . So the final answer is 5.
15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Most of the data falls in the 20–29 interval. So the final answer is ages 20–29 are most common.
16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $4 + 6 = 10$ . So the final answer is 10.
17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is No – the bars touch. So the final answer is No.
18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is It shows the frequency (count). So the final answer is frequency.
19. Read the height of the bar over 10–19. That bar reaches 5, so there are 5 values in that interval.
20. The most common interval has the tallest bar. The 10–19 bar is tallest, so that interval is most common.
21. A histogram total is the sum of all bar heights. Add  $2 + 5 + 3 + 4 = 14$ , so 14 values are shown.
22. Values 20 or higher are in the 20–29 and 30–39 bars. Add their heights:  $3 + 4 = 7$ .
23. Compare the two bar heights. The 0–9 bar is 2 and the 10–19 bar is 5, so  $5 - 2 = 3$  fewer.
24. In a histogram, bar height means frequency, or how many data values are in that interval. A height of 8 means 8 values.
25. Histogram bars touch because the intervals run continuously from one range to the next. So there are no gaps.
26. The least common interval has the shortest bar. The shortest bar is 40–49, with height 1.
27. Below 20 includes 0–9 and 10–19. Add those heights:  $4 + 6 = 10$ .
28. Look directly above the label 30–39. Its bar has height 2, so the answer is 2.
29. The range 10–29 includes two bars: 10–19 and 20–29. Add  $7 + 5 = 12$ .
30. The most common score interval is the tallest bar. The 70–79 bar has the greatest height, so the answer is 70–79.



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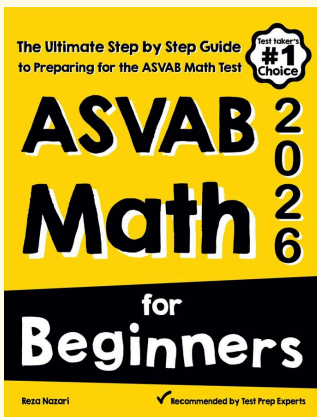
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