

2022 MCAS Sample Student Work and Scoring Guide

Grade 6 Mathematics

Question 4: Constructed-Response

Reporting Category: Statistics and Probability

Standard: [6.SP.B.5](#) - Summarize numerical data sets in relation to their context.

Item Description: Given a dot plot representing a real-world context, answer questions related to measures of center and distribution of the data.

Calculator: Not allowed

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Scoring Guide

Select a score point in the table below to view the sample student response.

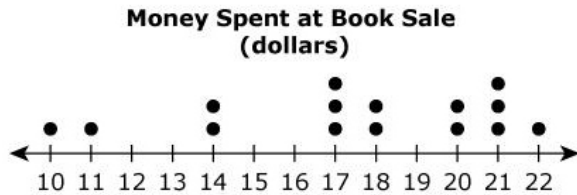
Score*	Description
4A	The student response demonstrates an exemplary understanding of the Statistics & Probability concepts involved in summarizing a numerical data set displayed in a dot plot, in relation to the context.
4B	
3	The student response demonstrates a good understanding of the Statistics & Probability concepts involved in summarizing a numerical data set displayed in a dot plot, in relation to the context. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 3 points.
2	The student response demonstrates a fair understanding of the Statistics & Probability concepts involved in summarizing a numerical data set displayed in a dot plot, in relation to the context. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Statistics & Probability concepts involved in summarizing a numerical data set displayed in a dot plot, in relation to the context.
0	The student response contains insufficient evidence of an understanding of the Statistics & Probability concepts involved in summarizing a numerical data set displayed in a dot plot, in relation to the context. As a result, the response does not merit any points.

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).

Score Point 4A

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.



Part A

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

3 customers spent exactly \$17. I know this because in the column for 17 dollars there are 3 dots.

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

7 people spent less than the median amount of money spent at the book sale. First, I found the median. I put all the numbers in order, and the middle number was 18, so 18 was the median. Then, I looked at the dot plot, and found how many dots were their on the left side of 18. There were 7.

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

10 people spent more than \$14 but less than \$22. I looked between the 2 numbers on the dot plot. There were 3 people who spent \$17, 2 people who spent \$18, 2 people who spent \$20, and 3 people who spent \$21. The total added up to 10.

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

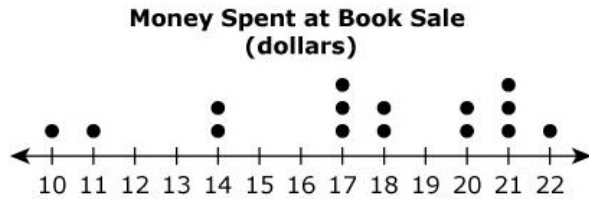
Enter your answer and your work or explanation in the space provided.

First, I looked at the dot plot and found how many dots were on the left side of 20. There were 9. To make it a percent, I first made it a fraction. $\frac{9}{15}$. When I converted that to a percent I got 60. So the percent of customers at the book sale that spent less than 20 dollars is 60%.

Score Point 4B

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.



Part A

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

3 customers spent exactly 17 dollars.
there are three dots above the number 17 in the plot

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

7
10, 11, 14, 14, 17, 17, 17, 18, 18, 20, 20, 21, 21, 21, 22
cross out one from each side until you are left with the median
or count all the dots on the dot plot (15) and see that there will be 7 customers on each low and high quartile. I am not good at explaining.

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

10

three seventeens, two 18, two 20,
three 21

just look at the dot plot and add all the
dots up

10

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

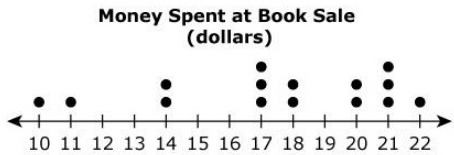
$$\frac{9}{15} = \frac{60}{100}$$

%60

Score Point 3

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.



Part A

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

3

I got three because above 17 there are 3 dots

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

Median is the greatest-least so you would do $22 - 10 = 12$

There is only 1 dot between so the answer would be 1.

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

10

I got that because there are 10 dots between 14 and 22.

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

60%

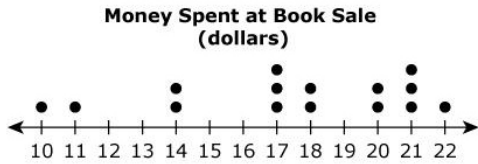
$$\frac{9}{15} = \frac{a}{100}$$

I crossed multiplied and got 900 and 15a. After that I did $900 \div 15 = 60$

Score Point 2

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.



Part A

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

3 People because on the graph it shows us that there are 3 dots above the 17 so that means 3 people spent 17 dollars at the book sale.

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

7 people because when you write it out the median is 18 so that means anything behind 18 is what we need to count and from that I got 7 people.

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

11 people, I got this answer from counting from 15 to 21 and there are 11 dots in the middle of them so it's 11 people.

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

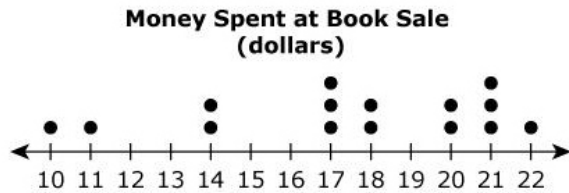
Enter your answer and your work or explanation in the space provided.

66% because $15 = 100\%$ so then $5 = 33\%$ so 10 equals 66%

Score Point 1

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.

**Part A**

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

3 people because 17 has 3 dots above it

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

1 person spent ten and then is less than 15 and fifteen is in the middle

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

3 people spent 21 dollars

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

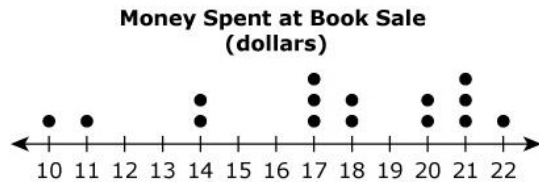
Enter your answer and your work or explanation in the space provided.

9 because all the dots add up to 9

Score Point 0

This question has four parts.

There were 15 customers at a book sale. This dot plot shows the amount of money, in dollars, that each customer spent at the book sale.



Part A

Based on the dot plot, how many customers at the book sale spent exactly 17 dollars? Explain your reasoning.

Enter your answer and your explanation in the space provided.

\$32 if you add $15 + 17$ you get 32 so the customers spent 32 dollars on the book sale.

Part B

How many customers at the book sale spent **less** than the median amount of money spent at the book sale? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

10 ,11 ,22 customers spent less money at the book sale.

Part C

How many customers at the book sale spent more than 14 dollars but less than 22 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

\$36 dollars if you add $14 + 22$ you get 36 dollars.

Part D

What **percent** of the customers at the book sale spent less than 20 dollars? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

10 customers spent less then 20 dollars.