

## **Performance Task: The Basketball Star**

Name \_\_\_\_\_

Date \_\_\_\_\_

### **Mathematical Goals**

- Represent data with plots on the real number line.
- Compare center and spread of two or more different data sets.
- Interpret differences in shape, center, and spread in the context of data sets accounting for outliers.
- Use frequencies and relative frequencies to compare data sets.

### **Essential Questions**

- How can I use visual representations and measures of center and spread to compare two data sets?

### **Common Core Georgia Performance Standards**

- **MCC9-12.S.ID.1** Represent data with plots on the real number line (dot plots, histograms, and box plots).
- **MCC9-12.S.ID.2** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation-Advanced Algebra) of two or more different data sets.
- **MCC9-12.S.ID.3** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- **MCC9-12.S.ID.5** Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

### **Standards for Mathematical Practice**

3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
6. Attend to precision.

## Performance Task: The Basketball Star

Name \_\_\_\_\_

Date \_\_\_\_\_

Bob believes he is a basketball star and so does his friend Alan.

### **Bob's Points per Game**

8, 15, 10, 10, 10, 15, 7, 8, 10, 9, 12, 11, 11, 13, 7, 8, 9, 9, 8, 10, 11, 14, 11, 10, 9, 12, 14, 14, 12, 13, 5, 13, 9, 11, 12, 13, 10, 8, 7, 8
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### **Alan's Points per Game**

1, 3, 0, 2, 4, 5, 7, 7, 8, 10, 4, 4, 3, 2, 5, 6, 6, 6, 8, 8, 10, 11, 11, 10, 12, 12, 5, 6, 8, 9, 10, 15, 10, 12, 11, 11, 6, 7, 7, 8
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1. Create dot plots for Bob and Alan's last forty games.
2. Create box plots for Bob and Alan's last forty games.
3. Create histograms of both Bob's and Alan's data.
4. Which graphical representation best displayed Bob's and Alan's data?
5. Use summary statistics to compare Bob and Alan's points per game.
6. Describe each person's data in terms of center, spread, and shape.

7. After the season, the statistician did not have time to compute Bob's relative frequency. Complete the table by determining the relative frequency for Bob.

<i>Points Scored</i>	<i>Frequency for Bob</i>	<i>Relative Frequency for Bob</i>	<i>Frequency for Alan</i>	<i>Relative Frequency for Alan</i>
0	0		1	0.025
1	0		1	0.025
2	0		2	0.050
3	0		2	0.050
4	0		3	0.075
5	1		3	0.075
6	0		5	0.125
7	0		4	0.100
8	6		5	0.125
9	5		1	0.025
10	7		5	0.125
11	6		4	0.100
12	5		3	0.075
13	5		0	0.000
14	3		0	0.000
15	2		1	0.025
<b>TOTALS</b>	<b>40</b>		<b>40</b>	<b>1.000</b>

8. Discuss any trends or associations from the table below concerning points scored by the two basketball players.

9. Based on your representations and your calculations, is either friend a basketball star? Justify your answer, based on your graphical representations (#1-3), your summary statistics (#5), and the frequency / relative frequency table (#7-8).