Lesson 12: Describing the Center of a Distribution Using the Median

Problem Set

1. The amount of precipitation in the western states in the U.S. is given in the table as well as the graph.

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| State | Amount of Precipitation (in.) |
| WA | $$38.4$$ |
| OR | $$27.4$$ |
| CA | $$22.2$$ |
| MT | $$15.3$$ |
| ID | $$18.9$$ |
| WY | $$12.9$$ |
| NV | $$9.5$$ |
| UT | $$12.2$$ |
| CO | $$15.9$$ |
| AZ | $$13.6$$ |
| NM | $$14.6$$ |
| AK | $$58.3$$ |
| HI | $$63.7$$ |

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Data Source: <http://www.currentresults.com/Weather/US/average-annual-state-precipitation.php>

* 1. How do the amounts vary across the states?
	2. Find the median. What does the median tell you about the amount of precipitation?
	3. Use the median and the range to describe the average monthly precipitation in western states in the U.S.
	4. Do you think the mean or median would be a better description of the typical amount of precipitation? Explain your thinking.
1. Identify the following as true or false. If a statement is false, give an example showing why.
	1. The median is always equal to one of the values in the data set.
	2. The median is the midpoint between the smallest and largest values in the data set.
	3. At most, half of the values in a data set have values less than the median.
	4. In a data set with $25$ different values, if you change the two smallest values of a data set to smaller values, the median will not be changed.
	5. If you add $10$ to every element of a data set, the median will not change.
2. Make up a data set such that the following is true:
	1. The set has $11$ different values and the median is $5$.
	2. The set has $10$ values and the median is $25$.
	3. The set has $7$ values and the median is the same as the smallest value.
3. The dot plot shows the number of landline phones that a sample of people have in their homes.



* 1. How many people were in the sample?
	2. Why do you think three people have no landline phones in their homes?
	3. Find the median number of phones for the people in the sample.
	4. Use the median and the range (maximum-minimum) to describe the distribution of the number of phones.

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| Player | Salary ($\$$) |
| Kobe Bryant | $$\$27,849,149$$ |
| Dwight Howard | $$\$19,536,360$$ |
| Pau Gasol | $$\$19,000,000$$ |
| Steve Nash | $$\$8,700,000$$ |
| Metta World Peace | $$\$7,258,960$$ |
| Steve Blake | $$\$4,000,000$$ |
| Jordan Hill | $$\$3,563,600$$ |
| Chris Duhon | $$\$3,500,000$$ |
| Jodie Meeks | $$\$1,500,000$$ |
| Earl Clark | $$\$1,240,000$$ |
| Devin Ebanks | $$\$1,054,389$$ |
| Darius Morris | $$\$962,195$$ |
| Antawn Jamison | $$\$854,389$$ |
| Robert Sacre | $$\$473,604$$ |
| Darius Johnson-Odom | $$\$203,371$$ |

1. The salaries of the Los Angeles Lakers for the 2012–2013 basketball season are given below.

Data Source: [www.basketball-reference.com/contracts/LAL.html](http://www.basketball-reference.com/contracts/LAL.html)

* 1. Just looking at the data, what do you notice about the salaries?
	2. Find the median salary, and explain what it tells you about the salaries.
	3. Find the median of the lower half of the salaries and the median of the upper half of the salaries.
	4. Find the width of each of the following intervals. What do you notice about the size of the interval widths, and what does that tell you about the salaries?
		1. minimum salary to median of the lower half:
		2. median of the lower half to the median of the whole set:
		3. median of the whole set to the median of the upper half:
		4. median of the upper half to the highest salary:
1. Use the salary table from above to answer the following.
	1. If you were to find the mean salary, how do you think it would compare to the median? Explain your reasoning.
	2. Which measure do you think would give a better picture of a typical salary for the Lakers, the mean or the median? Explain your thinking.