Math 1 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **7-1 Histograms Practice** Date\_\_\_\_\_\_\_\_\_\_

*Learning Goals:*

* I can describe the center and spread of a distribution.
* I can compare two distributions by examining their shapes, centers and spreads.
* I can interpret the differences in the shape, center, and spread of a data set in the context of a problem.
* I can interpret and explain the meaning of relative frequencies in the context of a problem.

The 3 histograms below show the batting averages of the winners of the batting title in the major league baseball (for both the American & National leagues) for certain years in the 1900s. Batting average shows the percent (written as a decimal) of the time a certain player gets a hit. A player who has a batting average of 0.405 has gotten a hit in 40.5 % of the times that they were at bat. The batting title is an award given to the player with the highest batting average for a given season. Refer to the histograms as you answer questions 1 – 6.



\_\_\_\_\_\_\_\_\_ 1. How many batting titles were won with a batting average of between 0.300 – 0.350 from 1901 to 1930?

\_\_\_\_\_\_\_\_\_ 2. How many batting titles were won with a batting average of between 0.300 – 0.350 from 1931 to 1960?

\_\_\_\_\_\_\_\_\_ 3. How many batting titles were won with a batting average of between 0.300 – 0.350 from 1961 to 1990?

4. If you were to find the mean of each of the winning batting averages for each time period, which time period do you think would have the highest mean? Explain.

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5. As the century progressed, what in general happened to the batting averages of the batting title winners? Explain.

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For questions 6 – 10, refer to the following 2 histograms. These histograms were made in an attempt to determine if William Shakespeare was really just a pen name for Sir Francis Bacon. (A pen name is a fake name used by another person when writing). A few scholars have had this idea and in order to determine if this was true, a researcher had to count the letters in every word of Shakespeare’s plays & Bacon’s writing (and you thought you had a lot of homework). Their results are recorded in the histograms below.

\_\_\_\_\_\_\_\_\_ 6. What percent of all Shakespeare’s words are 4 letters long?

\_\_\_\_\_\_\_\_\_ 7. What percent of all Bacon’s words are 4 letters long?

\_\_\_\_\_\_\_\_\_ 8. What percent of all Shakespeare’s words are more than 5 letters long?

\_\_\_\_\_\_\_\_\_ 9. What percent of all Bacon’s words are more than 5 letters long?

10. Based on these histograms on the previous page, do you think that William Shakespeare was really just a pen name for Sir Francis Bacon? Explain.

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Suppose that the two histograms above show the sleeping habits of the teens at two different high schools. Wheatland High School is a small rural school consisting of 100 students while Urbandale High School is located in a large city and has 3,500 students.

\_\_\_\_\_\_\_\_\_ 11. About what percent of the students at Wheatland get at least 8 hours of sleep

per night?

\_\_\_\_\_\_\_\_\_ 12. About what percent of the students at Urbandale get at least 8 hours of sleep

per night?

\_\_\_\_\_\_\_\_\_ 13. Which high school has more actual students that sleep between 9 – 10 hours per night?

\_\_\_\_\_\_\_\_\_ 14. Which high school has a higher median sleep time?

15. Wheatland’s percent of students who sleep between 8-9 hours a night is \_\_\_\_\_\_\_\_ % more than Urbandale’s percent of students who sleep between 8-9 hours per night.

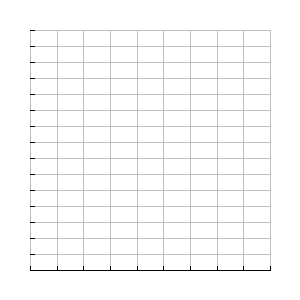
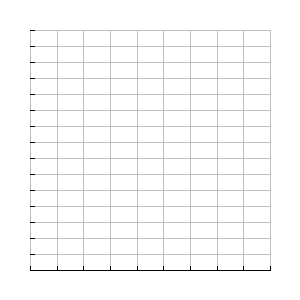
16. The charts below shows the age of the actress & actor who won the Oscar for best actress or actor during the first 30 years of the Academy Awards. Use the charts to make two histograms (one for winning actresses ages & one for winning actors ages) displaying this information. Have the *x* – axis increase by ten years (0-9; 10-19; 20-29 etc.)

|  |  |  |
| --- | --- | --- |
| **Year** | **Age of Winning Actress** | **Age of Winning Actor** |
| 1943 | 24 | 49 |
| 1944 | 29 | 41 |
| 1945 | 37 | 40 |
| 1946 | 30 | 49 |
| 1947 | 34 | 56 |
| 1948 | 34 | 41 |
| 1949 | 33 | 38 |
| 1950 | 28 | 38 |
| 1951 | 38 | 52 |
| 1952 | 45 | 51 |
| 1953 | 24 | 35 |
| 1954 | 26 | 30 |
| 1955 | 47 | 38 |
| 1956 | 41 | 41 |
| 1957 | 27 | 43 |

|  |  |  |
| --- | --- | --- |
| **Year** | **Age of Winning Actress** | **Age of Winning Actor** |
| 1928 | 22 | 42 |
| 1929 | 36 | 40 |
| 1930 | 28 | 62 |
| 1931 | 62 | 53 |
| 1932 | 32 | 35 |
| 1933 | 24 | 34 |
| 1934 | 29 | 33 |
| 1935 | 27 | 52 |
| 1936 | 27 | 41 |
| 1937 | 28 | 37 |
| 1938 | 30 | 38 |
| 1939 | 26 | 34 |
| 1940 | 29 | 32 |
| 1941 | 24 | 40 |
| 1942 | 34 | 43 |

**Histograms**

Winning actresses ages Winning actors ages



17. After you graph the histograms on the next page, write a short paragraph discussing what your two histograms reveal.

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