**Review – Honors Algebra 2** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hr\_\_\_\_\_

**Box Plots, Measures of Center, Sampling, Outliers**

Directions: Be sure to include a detailed title, label your five-number summary, and percentages for your box plots.

1. Samantha is trying to decide if she wants to attend a school in-state or out-of-state.

Please visit <http://money.cnn.com/tools/collegecost/collegecost.html> to get the data sets for the lines below in part a. (Search the exact names listed below in the “Enter School Name” search box.)

In-State Colleges: Wayne State University, Oakland University, Ferris State University, Eastern Michigan University, Michigan State University

Out-of-State Colleges: University of Florida, Florida State University, University of Georgia, University of South Carolina (Columbia), University of Alabama (Tuscaloosa)

a. In-State-Tuition Data: (Make sure you use: “In-State Tuition and **not** “Total Annual Cost”)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Out-of-State Tuition Data: (Make sure you use: “Out-of-State Tuition and **not** “Total Annual Cost”)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Determine the mean and median for the in-state and out-of-state tuition costs.

In-State Tuition \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Out-of-State Tuition  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In-State Tuition M \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Out-of-State Tuition M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. List the 5-number summary for the out-of-state and in-state tuition costs.

In-State \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Out-of-State \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Create a box plot for the data, and then answer the following questions.

e. 75% of the In-State tuition costs are above what dollar amount?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f. Explain what the 50th percentile of the Out-of-State box plot tells you?

2. Using the outlier rule determine if an outlier exists in the data set given below.

Free Throw Shooting Percentages for the 2014-15 Detroit Pistons:

|  |  |
| --- | --- |
| [Greg Monroe](http://espn.go.com/nba/player/_/id/4260/greg-monroe), PF | 0.74 |
| [Brandon Jennings](http://espn.go.com/nba/player/_/id/3997/brandon-jennings), PG | 0.84 |
| [Reggie Jackson](http://espn.go.com/nba/player/_/id/6443/reggie-jackson), PG† | 0.95 |
| [Andre Drummond](http://espn.go.com/nba/player/_/id/6585/andre-drummond), C | 0.39 |
| [Kentavious Caldwell-Pope](http://espn.go.com/nba/player/_/id/2581018/kentavious-caldwell-pope), SG | 0.69 |
| [Jodie Meeks](http://espn.go.com/nba/player/_/id/4003/jodie-meeks), SG | 0.92 |
| [D.J. Augustin](http://espn.go.com/nba/player/_/id/3415/d.j.-augustin), PG† | 0.87 |
| [Kyle Singler](http://espn.go.com/nba/player/_/id/6469/kyle-singler), SF† | 0.81 |
| [Anthony Tolliver](http://espn.go.com/nba/player/_/id/3276/anthony-tolliver), PF† | 0.80 |
| [Tayshaun Prince](http://espn.go.com/nba/player/_/id/1724/tayshaun-prince), SF† | 0.69 |

3. The box plot given below represents the wait time at Olive Garden on a Saturday night. Analyze the box plot by the questions that follow.



0 6 12 18 24 30

 Wait Time for OG Customers

a. What percent of customers will wait less than 9 minutes?

b. What is the shortest wait time?

c. Suppose 591 customers visit the Olive Garden that night. Of these customers, how many would wait more than 21 minutes?

d. What does the “+” symbol denote?

e. Is the 30 minute wait time truly an outlier? Support your decision using the outlier rule.

4. Refer to the box & whisker graph below which shows the test results of a math class.

**Test Scores (as %) for 6th Period**

 38 72 88 96 100

\_\_\_\_\_\_\_\_ a. What was the high score on the test?

\_\_\_\_\_\_\_\_ b. What percent of the class scored above a 72?

\_\_\_\_\_\_\_\_ c. What was the median score on the test?

\_\_\_\_\_\_\_\_ d. What percent of the class scored between 88 & 96?

e. Do you think that this test was too hard for the students? Explain.

5. Refer to the box & whisker graph below that shows how much time was spent per night on homework for sophomore class at a certain high school during September.

**Average Minutes Per Night Spent On Homework**

 0 20 48 60 190

\_\_\_\_\_\_\_\_ a. What percent of the sophomores spend more than 48 minutes on homework per night?

\_\_\_\_\_\_\_\_ b. What is the IQR for the sophomores?

\_\_\_\_\_\_\_\_ c. What is the 75th percentile?

\_\_\_\_\_\_\_\_ d. There are 398 students in the sophomore class. **How many** of these sophomores

 study less than 20 minutes per night?

6. A university polled 500 of its students, randomly selecting them proportional to the number of students enrolled in each degree program. Classify the sampling method.

a. simple random b. stratified c. convenience d. systematic e. voluntary response

7. To do market research, a telemarketing firm randomly selected 1000 names from a store’s database and contacted them. Classify the sampling method.

a. simple random b. stratified c. convenience d. systematic e. voluntary response

8. To get reactions about a particular new car, readers of a car magazine were asked to mail in their answers to a survey. Classify this sampling method.

a. simple random b. stratified c. convenience d. systematic e. voluntary response

9. When a random starting point is chosen, followed by every nth individual, this sampling method is

a. simple random sampling c. stratified random sampling

b. cluster random sampling d. systematic random sampling

10. Which question is unbiased?

a. Does the school board have the right to enforce a dress code?

b. Do you think the mayor is doing a good job in spite of his questionable character?

c. Do you prefer daytime or evening television programming?

d. Do you think the government should be allowed to cut down trees willy-nilly to build a new highway?

11. Which question is biased?

a. Do you prefer daytime or evening television programing?

b. Should there be a school dress code?

c. Do you prefer news or mindless sitcoms?

d. Do you think a new highway should be built?

For #12-15, match these terms with the descriptions below.

a. population b. census c. voluntary-response sample d. convenience sample

\_\_\_\_ 12. An easily accessible sample is chosen.

\_\_\_\_ 13. Every member of the population is studied.

\_\_\_\_ 14. The population is invited to respond.

\_\_\_\_ 15. A complete group that is being studied.