Geometry CC
Statistics Review

Name: **KEY**

Date: _____ Period: _____

Find the mean, median, and mode of each data set.

1. {4, 16, 25, 9, 36, 49}

2. {1, 7, 7, 2, 3, 14, 127, 8}

3. {5, 10, 15, 20, 25}

$\bar{x}$ = **23.16**

$\bar{x}$ = **21.125**

$\bar{x}$ = **15**

Median = **20.5**

Median = **7**

Median = **15**

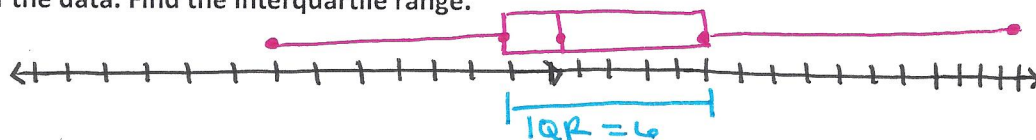Mode = **no mode**

Mode = **7**

Mode = **no mode**

Make a box-and-whisker plot of the data. Find the interquartile range.

4. {12, 15, 12, 6, 18, 29}
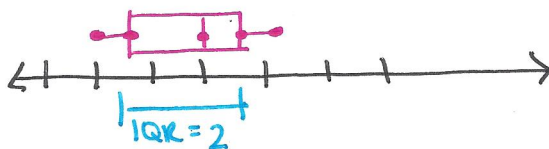
Min = 6
Q1 = 12
med = 13.5
Q3 = 18
max = 29

5. {2, 2, 3, 8, 2, 8, 2, 42}

min = 2
Q1 = 2
med = 2.5
Q3 = 8
max = 42

6. {3, 4, 3, 1, 2}

min = 1
Q1 = 1.5
med = 3
Q3 = 3.5
max = 4

7. Find the expected number of heads

Three Coins Are tossed				
Number of Heads	0	1	2	3
Probability	1/8	3/8	3/8	1/8

$0(1/8) + 1(3/8) + 2(3/8) + 3(1/8) = 1.5$

Find the variance and standard deviation

8. {4, 4, 4, 4, 5}

9. {8, 12, 30, 35, 48, 50, 62}

10. {14, 26, 40, 52}

σ^2 = **0.16**

σ^2 = **343.73**

σ^2 = **205.06**

σ = **0.4**

σ = **18.54**

σ = **14.32**

Test Prep:

11. Which data set would give the smallest standard deviation?

   Ⓐ $\{1, 5, 7, 50\}$ Ⓒ $\{100, 200, 300, 400\}$

   Ⓑ $\{2, 10, 102, 110\}$ Ⓓ⃝ $\{100, 101, 102, 105\}$

12. Which of the following is NOT true about the data sets $\{0, 48, 49, 50, 51, 52, 100\}$ and $\{0, 1, 2, 50, 98, 99, 100\}$?

   Ⓕ The means are equal.   Ⓗ⃝ The variances are equal.

   Ⓖ The ranges are equal.   Ⓙ The medians are equal.

13. The mean score on a test is 50. Which cannot be true?

   Ⓐ Half the scores are 0, and half   Ⓒ⃝ Half the scores are 25, and half
        the scores are 100.   the scores are 50.

   Ⓑ The range is 50.   Ⓓ Every score is 50.

Determine the sampling method and decide whether it could result in a biased sample. Explain your reasoning.

14. A survey of students at a school is taken by asking all the students that are still at the school at 5PM whether they play sports. *convenience*

Yes, students at school at 5pm are there for some kind of extracurricular activity; likely to be a sport.

15. A baker wants to know if her customers are satisfied with the selection of baked goods. She asks the first 20 people who make a purchase on a Saturday morning. *convenience*

Yes, some people may not be up early on Saturday. Also, the baked goods may not be a good later in the day.

16. The manager of an apartment building wants to know if the residents are satisfied with his service. He writes each apartment number on a piece of paper and places the pieces of paper in a hat. Then he randomly chooses 10 apartment numbers and asks the residents of the 10 apartments about his service.

Random.

No, a random sample is likely to be representative of the population.

17. The manager of a city bus system wants to know if the people who ride the buses are satisfied with the service. She decides to post mail-in surveys on each of the city's buses.

Self-selected.

Yes, usually only people with a strong feeling will fill out the survey. Also, not everyone rides the bus.

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One hundred students out of 800 at a school were surveyed. The results are recorded in each problem below. Predict the number of students in the population that would answer similarly.

18. Twenty-five said the attended the fall play $\frac{25}{100} = \frac{x}{800} \rightarrow x = 200$ students

19. Seventy-eight said the rode the bus to school 624 students

20. Eighty-two said they had taken an art class as an elective 656 students

21. Sixty-four said they were members of an extracurricular club 512 students

22. Sixty-five said they played a sport 520 students

Test Prep:

23. In a survey of 80 students, 25 said that they planned on attending the pep rally. The school has 550 students. Predict the number of students who plan to attend the pep rally.

    A 55 students
    B 80 students
    C 172 students
    D 378 students

24. The principal of a school wants to know if the students at the school would like to have the morning announcements posted on the school's Web site. Which sampling method is most likely to yield an accurate predication about the population?

    F Survey every 10th student who enters the cafeteria during the lunch period.
    G Survey every 20th student who enters the cafeteria during the lunch period.
    H Survey only the students who report that they visit the school's Web site regularly.
    J Survey only the students who report that they do not visit the school's Web site regularly.

Determine whether each situation is an experiment or an observational study

25. A researcher wants to know whether babies born into homes with older siblings develop speech skills earlier than babies who are born as only children. Observational

26. A bakery wants to know whether glaze or powdered sugar is more enticing pastry topping. They make some pastries with each topping, and see which sells better. Experiment

27. A car dealer wants to know what color cars seem to sell the best, so she looks over the past year's sales records. Observational

28. A cell phone manufacturer wants to investigate the user-friendliness of a new design, so the manufacturer gives the new phones to fifty people for a week and then gets their feedback. *Experiment*

29. A filmmaker wants to know the effect of eating fast food on his general health, so he eats fast food every day for four weeks and has doctors monitor his health. *Experiment*

30 A researcher is considering three method of evaluating two different brands of first aid healing ointment for minor cuts. Classify each method as a survey, an experiment or an observational study. Then explain which method would be most reliable.

Method A	Method B	Method C
Randomly divide a group of 100 people with minor cuts into two groups. Have each group use a different ointment, and record how long it takes their cuts to heal.	Choose 100 people at random. Ask which ointments they have used in the past, and how quickly their cuts have healed with each ointment.	Monitor 100 people who are currently treating minor cuts with an ointment of their choosing, and record how long it takes for them to heal.

Method A is most reliable

Experiment   *Survey*   *Observational*

Test Prep:

31. Which of the following is generally the most reliable data-gathering technique?
    - (A) survey
    - (B) randomized comparative experiment
    - (C) observational study
    - (D) treatment

32. Which is the control group in the study described below?

    Out of a group of 100 subjects, 50 were randomly selected to receive a vitamin D supplement. All 100 subjects were monitored through the winter to see how many caught the flu.

    - (F) the 100 subjects randomly selected for the study
    - (G) subjects who caught the flu
    - (H) the 50 subjects who received vitamin D supplements
    - (J) the 50 subjects who did not receive vitamin D supplements