

Math 3 Honors Portfolio ASSIGNMENT

Incoming Freshmen Math 3 Honors students,

The attached questions cover the content associated with the two Statistics units of the Math 1 course and a few additional Advanced Algebra topics. They represent the knowledge, skill, and conceptual understandings that Math 3 Honors students will need in order to be successful.

Notes outlining the topics of the summer assignment can be found on the Lakes webpage, under “Academics”, then “Summer Assignments”, and “Math 3 Honors Bridge Notes”. **They should be carefully read and reviewed first**, as well as used as a resource while completing the assignment problems. The notes document is a large file, so please be patient with load time.

Please complete all assignment problems to the best of your ability.

Math 3 Honors Portfolio Assignments are due to Mrs. Vikki Ecker, Math Department Chair at Lakes Community High School **by June 30th, 2023**. They may be dropped off between 8:00 am and 12:00 pm at the front office of the high schools or mailed.

Feedback on the summer assignment will be provided when the packets are returned. Thank you for your hard work!

We’re looking forward to an excellent four years!



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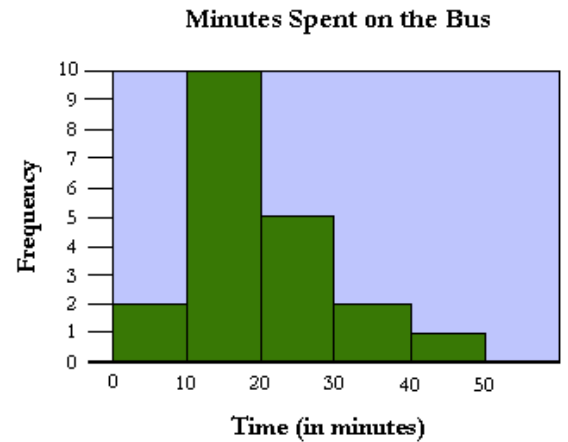
Last updated: May 29, 2023

4. Use the histogram to answer the following questions:
 a.) How many students spent more than 20 minutes on the bus?

b.) In what bin, do the least amount of students fall?

c.) Which bin has the largest frequency?

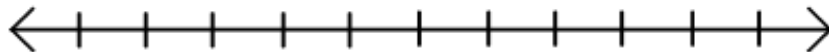
d.) Which bin has a frequency of 5?



Learning Target 9C: I can analyze and create dot plots from a set of data.

5. Using the data, create a dot plot.

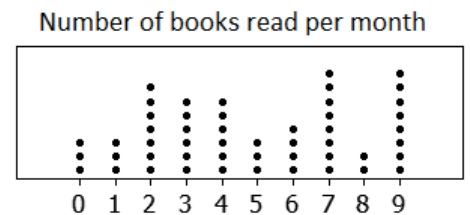
Giraffe Height (in feet) at the Milwaukee Zoo
 13, 14, 16, 15, 13, 10, 9, 7, 10, 12, 14, 16, 14



6. Use the dot plot about the number of books read per month to answer the following questions.

a.) How many students read 4 books per month?

b.) Based on the people surveyed, what amount of books was read by the least amount of people?



c.) Which quantities had the same frequency?

Learning Target 9D: I can determine the measures of central tendency and spread

7. Use the data below to determine the following values. Round to the nearest hundredth if necessary.

Number of games Wayne Gretzky played each season of his career:

79, 80, 80, 80, 74, 80, 80, 79, 64, 78, 73, 78, 74, 45, 81, 48, 80, 82, 82, 70

Mean: _____

Median: _____

Mode: _____

Range: _____

IQR: _____

Minimum: _____

Maximum: _____

Q1: _____

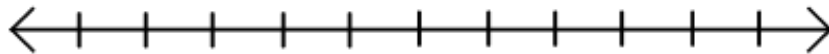
Q3: _____

Learning Target 9E: I can analyze and create box plots and double box plots.

8. Create a box plot using the data:

The cost of a gym membership for 1 year (in dollars)

200, 150, 175, 90, 95, 145, 120, 99, 75



Min: _____

Q1: _____

Median (Q2): _____

Q3: _____

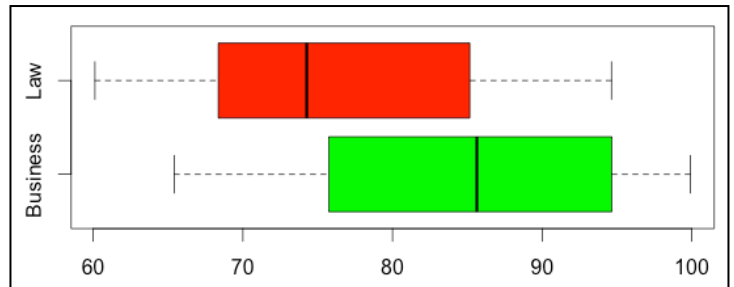
Max: _____

9. The graph below shows annual salaries (in thousands) of people in the fields of business and law. Answer the following questions using the graph:

a.) What is the approximate median salary for each field?

Law: _____

Business: _____



b.) What conclusion would you make about the salaries of those in the field of business compared to those in the field of law?

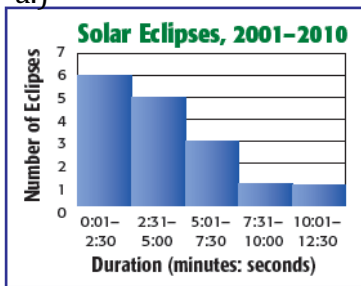
c.) What is the minimum of the Law salaries?

d.) What is the maximum salary for business?

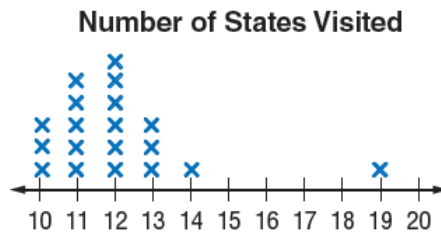
Learning Target 9F: I can determine the shape of a graph.

10. Describe the shape (symmetric, skewed left, skewed right or uniform) of each distribution below.

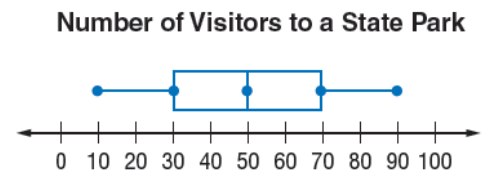
a.)



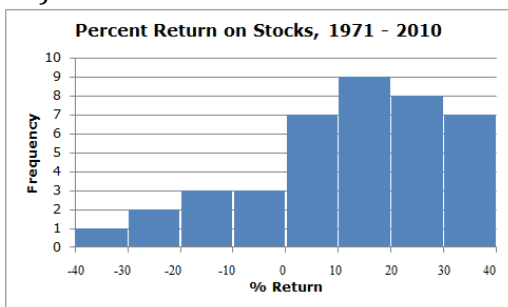
b.)



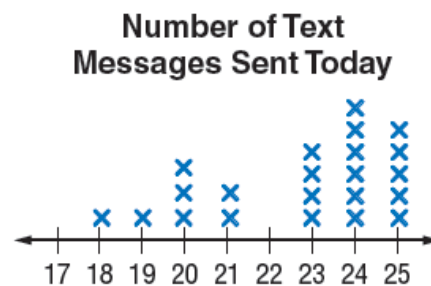
c.)



d.)



e.)



11. The weights (in pounds) of the defensive players of a high school football team are given in the table:

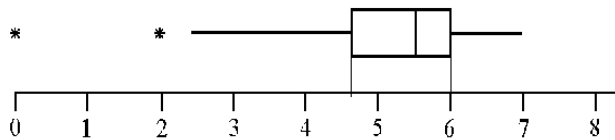
| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 173 | 145 | 205 | 192 | 197 | 227 | 156 | 240 | 172 | 185 |
| 208 | 185 | 190 | 167 | 212 | 228 | 190 | 184 | 195 | |

Is the data symmetric, skewed right, or skewed left? (HINT: graph using a histogram)

Learning Target 9G: I can visually determine outliers from a graphical representation and set of data.

12. Identify the values of the outliers from the graph and chart.

a.)

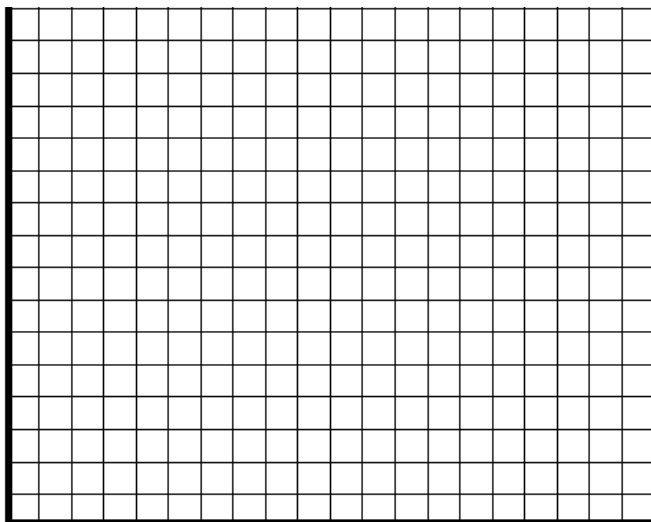


b.) The weights of 14 of Mrs. Smith's homemade candies, in grams, are shown.

| | | | | | | |
|------|------|------|------|------|------|------|
| 0.78 | 1.08 | 0.78 | 1.0 | 0.60 | 0.74 | 1.04 |
| 1.0 | 1.53 | 0.94 | 0.78 | 1.02 | 1.29 | 0.76 |

Learning Target 9H: I can analyze and create a scatter plot.

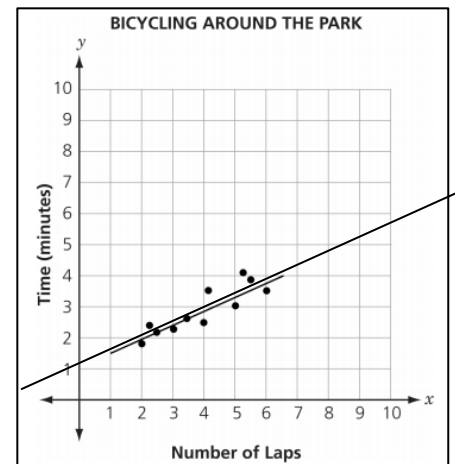
13. Use the chart to create a scatter plot of: Latitude vs. Elevation. *Don't forget your labels and a title!*



| City | North latitude | Elevation (in feet) |
|----------------|----------------|---------------------|
| Miami, FL | 26° | 7 |
| Charleston, SC | 33° | 40 |
| Washington, DC | 39° | 10 |
| Boston, MA | 42° | 15 |
| Portland, ME | 44° | 43 |

14. (multiple choice) A group of friends recorded the time it took to ride their bikes around the park. The scatter plot shows their results with the line of best fit. Based on the line of best fit, what is the approximate time it should take the complete 9 laps?

- a. 4
- b. 5
- c. 6
- d. 7



15. (multiple choice) Which of the following situations could be displayed as a scatter plot?

- a. The favorite breakfast cereals of 10 friends.
- b. The time it takes 10 students to swim a mile.
- c. The height and shoe size of 10 students
- d. The cost of lunch for 10 students

Learning Target 9I: I can determine a line of regression (best fit line) for a scatter plot and interpret its parts

16. (multiple choice) The linear regression equation for the predicted cost of a large pizza is given by $\hat{y} = 1.5x + 7.50$, where \hat{y} is the predicted cost of the pizza and x is the number of toppings. What does the slope represent?

- a. number of toppings
- b. cost per slice
- c. cost of each topping
- d. cost of the pizza with no toppings

17. (multiple choice) The linear regression equation $\hat{y} = 460x + 3495$ represents the value of a work of art, \hat{y} , based on the number of years, x , since 1982. (For example, $x = 1$ represents 1 year since 1982 - or the year 1983.) What does the number 3,495 represent?

- a. The value of the work of art in 1982.
- b. The value of the work of art today.
- c. The yearly decrease in value of the work of art.
- d. The yearly increase in value in the work of art.

18. The following table shows water depth vs. temperature in the Atlantic Ocean.

a) Describe the direction, form, and strength.

Direction: _____

Strength: _____

Form: _____

| Water Depth (x) (meters) | Temperature (y) (°C) |
|---------------------------------|-----------------------------|
| 50 | 18 |
| 75 | 15 |
| 100 | 12 |
| 150 | 7 |
| 200 | 1 |

c) Calculate the linear regression equation. *Round to 3 decimal places if necessary.*

d) Use your regression equation to predict the temperature at a depth of 175 meters.

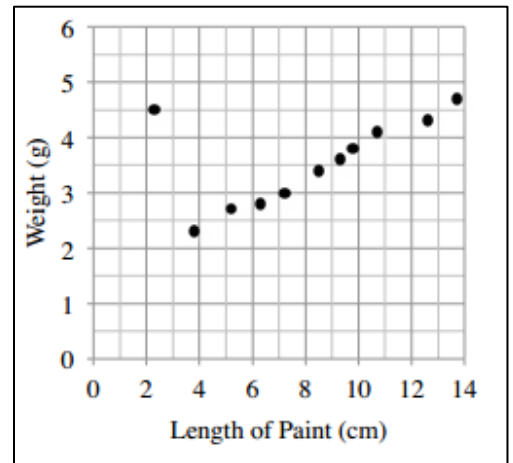
19. Cal collected data by measuring the pencils of his classmates. He recorded the length of the painted part of each pencil and its weight. His data is shown in the graph.

a. Describe the direction, form, and strength.

Direction: _____

Strength: _____

Form: _____



b. Cal came up with $\hat{y} = 0.25x + 1.4$ for his line linear regression equation. What does the slope represent in this context?

c. What does the y-intercept represent in this context?

Additional Math Topics:

Complex Numbers: Add, Subtract, Multiply, and Divide

20. Write the expression as a complex number in standard form

A.) $(4 - i) + (3 + 2i)$

B.) $5i(-2 + i)$

C.) $(7 - 4i)(-1 + 2i)$

D.) $\frac{5+3i}{1-2i}$

E.) $(2 - 3i) - (3 - 7i)$

21. Solve the following equations. Write your solution as a complex number if necessary.

A.) $x^2 = -16$

B.) $2x^2 + 26 = -10$

Solve by Factoring

22. Solve the following quadratic equations **by factoring**

A.) $x^2 + 3x - 18 = 0$

B.) $x^2 - 10 = 3x - 6$

C.) $8x^2 + 18x = 18$

Completing the Square

23. Solve the quadratic equations using completing the square

A.) $x^2 = 6x + 2$

B.) $x^2 + 6x + 10 = 0$