We Have the Same Birthday!

Student Activity

Name _____

Class _____

Part 1 – Birthdays in Your Class

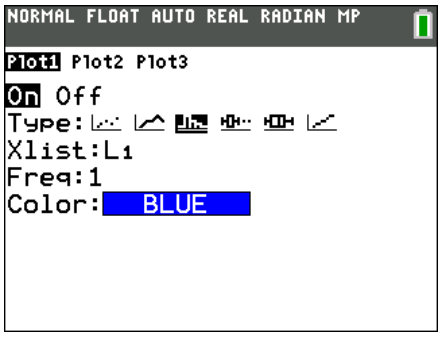
In this problem, you will input your birthday in a class list and explore the data.

1. Write your birthday as entered in the list: _____

2. How many students are in your class? _____

3. Receive the data list back from your teacher.

Create a histogram of the whole class data set. Press [2nd] [STAT PLOT] to set up the plot. Press [WINDOW] to adjust the viewing window. Make sure each month is represented by a bar in the histogram.

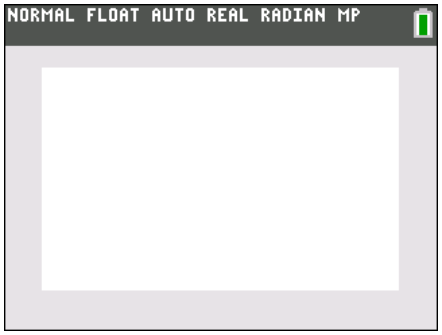


4. What window is most appropriate for your data?

_____

_____

5. Draw your histogram at the right. Label the graph appropriately.



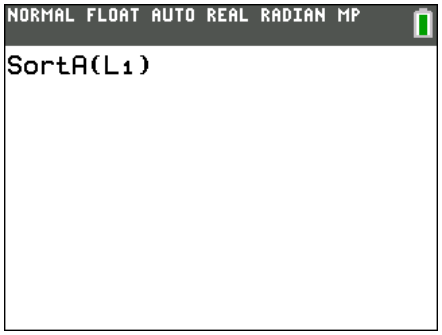
6. What does the shape of the graph tells us about the distribution of birthdays throughout the year?

_____

_____

7. Now, sort L1 in ascending order. On the Home screen, press [2nd] [LIST] ▶ [1] and then [2nd] [L1] [)] [ENTER]. Then press [STAT] and select **1:Edit…** to view L1.

Do any students share the same date? If so, how many dates are shared?



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8. Did the outcome surprise you? Why or why not? _____

_____

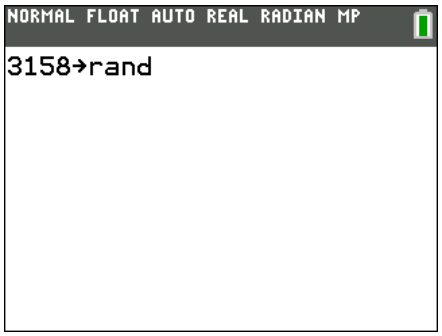
_____

Part 2 – A 50/50 Chance of Sharing a Birthday

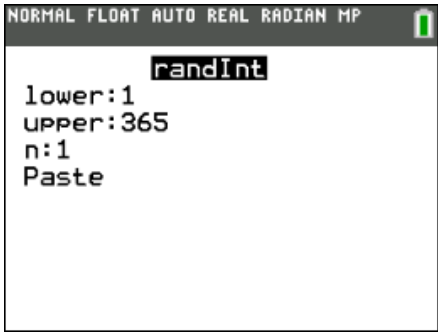
In this problem, you will experiment to find out many people need to be in a room to have better than a 50/50 change of two people sharing a birthday.

9. How many people do you think need to be in a room together to have a better than 50/50 chance that at least two people share a birthday? _____ people

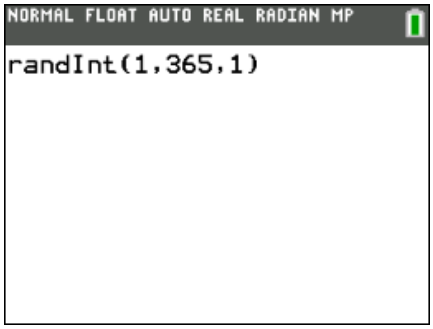
10. Set up your random number generator. On a clear home screen, enter the last 4 digits of your telephone number. Then press [STO▸] [MATH] ► ► ► to **PROB**, [ENTER] to select **rand**, then [ENTER] to execute the command.



11. Enter the command **randInt(1,365,1)** on the Home screen and press [ENTER]. To enter **randInt**, press [MATH] ► ► ► [5]. The randInt wizard will open. Configure as shown. Highlight Paste and press [ENTER].



You'll be taken back to the Home Screen where you will press [ENTER] to get the first random number.



You will see one number between 1 and 365. Record the number below.

Continue pressing [ENTER] to generate additional random numbers. Record the numbers as they are generated. Continue until you see a duplicate number. This represents a second person in the room having the same birthday as someone else.

_____

_____

_____

12. How many people (random numbers) were in the room before you had a duplicate birthday?

_____

13. Was the number you found in Question 12 greater or less than your initial estimate from Question 9? _____

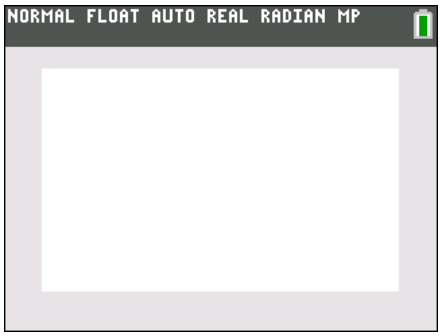
14. Were the results from the experiment surprising? Explain. _____

_____

_____

15. After the classroom has entered their number from Question 12 in list L1, create a histogram of the data in L1. Press [ZOOM] [9] to graph.

Sketch the graph to the right. Label your graph appropriately.



16. Use the mean command to find the mean of the list. Press [2nd] [LIST] ► ► [3] [2nd] [L1] [)] [ENTER]. _____

17. How does the class average compare to your estimate in Question 9? Does this surprise you? Explain._____

_____

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