### Part 1 – Empty or Full Seat

Airlines routinely overbook flights to ensure that as many seats as possible are full for each flight. They overbook because they expect a certain percent of people to not show up for their assigned seat.

In this problem, you will explore the number of seats to sell to book a full flight. The flight has 25 seats and historically 20% of people do not show up for the flight.

1. Set up the random number generator. Enter the number given by your teacher. Then press STO▸ MATH ► ► ► ENTER ENTER.

2. On the Home screen, enter the function shown at the right.

Press MATH ► ► ► and select **5:randInt(** to enter the **randInt** function. A wizard will open if the MODE setting has STATWIZARDS: ON. Fill in as shown. Highlight Paste and press ENTER.

NORMAL FLOAT AUTO REAL RADIAN MP

randInt
lower:1
upper:10
n:25
Paste

Press STO▸ 2nd L1 ENTER.

NORMAL FLOAT AUTO REAL RADIAN MP

randInt(1,10,25)→L₁
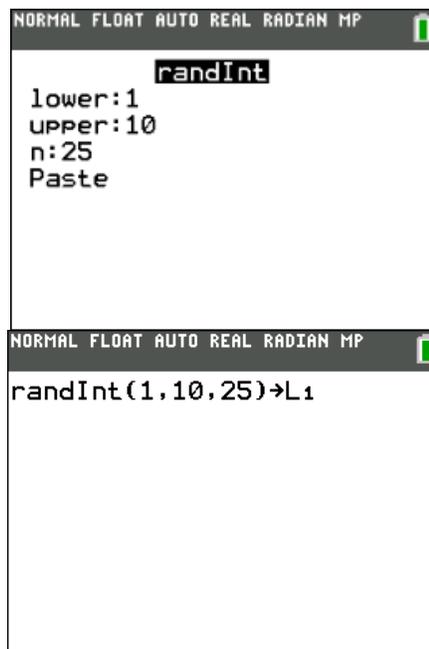
3. Explain in words what the function is calculating. _____

_____

4. Look at the list in L1 (press STAT and select **1:Edit…**) and write down your numbers.

_____

5. Go back to the Home screen and sort your list in ascending order. Press 2nd [LIST] ► 1 2nd [L1]) ENTER. To view the sorted list press STAT and select **1:Edit…**. Write your ordered list here.

_____

_____

NORMAL FLOAT AUTO REAL RADIAN MP

SortA(L₁)
....Done
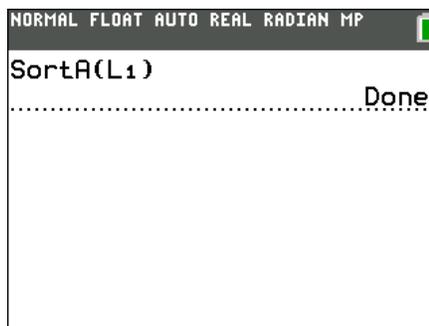
6. Since there is a 20% chance of randomly getting a 1 or a 2, let these represent someone not showing for the flight. In your list, how many people did not show up for the flight?

_____

7. How many people in your class had a full flight? _____

8. Repeat the steps in Questions 2 and 5 four additional times (for 5 flights total). Were any of your flights full? _____

9. How many empty seats were on each flight? _____ _____ _____ _____ _____

10. How many seats do you think you might need to sell to ensure the flight is full each time? Explain.

_____

_____

Part 2 – Oversold Seats

Now, you will see how many tickets should be sold to help ensure a full flight.

11. Modify the function in Question 2 to generate 50 random numbers. Instead of sorting the list, this time count from the top of the list and see how many numbers you count before you have a "full" flight. Remember 1s and 2s indicate a person that did not show up.

How many tickets needed to be sold for the flight to be full? _____

12. Repeat four more times (for a total of 5 flights including Question 11). How many tickets were needed for each flight?

Flight 2? _____   Flight 3? _____

Flight 4? _____   Flight 5? _____

13. How do the numbers of tickets sold for your flights compare to others in the class?

_____

_____

14. If you ran the company, how many extra seats would you sell to ensure that the flight is full each time? Explain.

_____

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_____

15. What if the no-show rate was 30%? How many seats would then need to be sold to ensure the flights are full each time?

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