Carbon Dioxide Specialist Instructions

Overview

You are responsible for:

1. Receiving data from Investigation Specialists on five initial conditions of Storage Facility C.
2. Running the fire simulator based on the data received from Investigation Specialists.
3. Calculating the mean, median, and mode of fire simulator results.
4. Reporting fire simulator results to the Communications Specialist.
5. Providing input on which value is the best measure of central tendency for the oxygen data.
6. Creating a box-and-whiskers plot for each run of the fire simulator.

Specialists Tasks

1. Have your Carbon Dioxide Specialist worksheet and report form ready at your work station.

Tasks for Carbon Dioxide Specialist Member One

2. Receive the initial conditions data from the Investigation Specialists. The data will be written on a report form that looks like the image below:

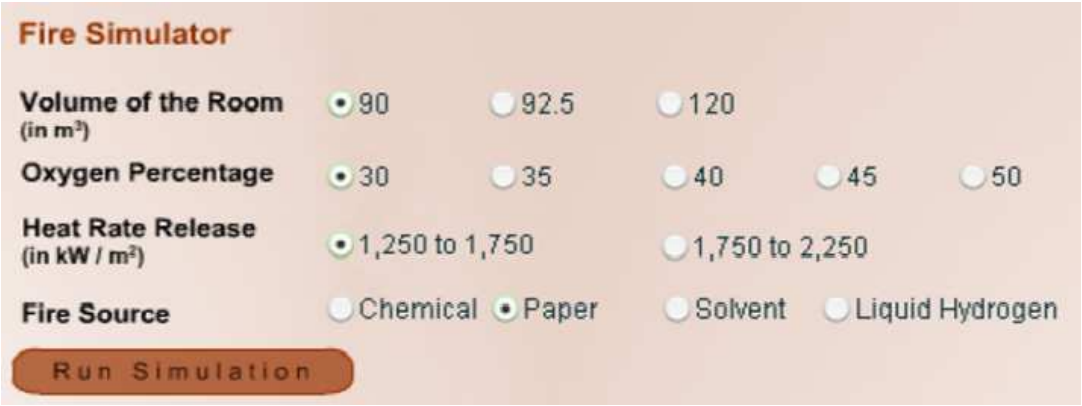
Internal Report Form

From: Investigation Specialists
To: Communications Specialists

Communications specialist **MUST** fill in the Communications Specialist worksheet with this data and then **MUST** forward this report form to a Carbon Dioxide or Oxygen Specialist.

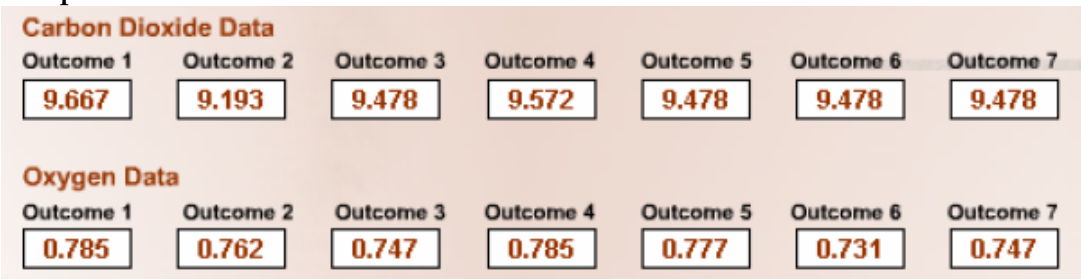
Simulation Run #	Room Volume	Oxygen Percentage	Heat Rate Release	Fire Source
1				

3. Input this data into the fire simulator. The fire simulator will look like the image below:



4. After you run the fire simulator, you will view a set of data that looks like the image below:

Sample Data



5. For the carbon dioxide data round each number to the hundredths place. For example, for Outcome 1, round 9.667 to 9.67.

6. Calculate the mean for the data:

Sample Problem

- The mean is the sum of all the data divided by the number of data points.
- To calculate the mean of the sam0le data above, first add all of the rounded numbers together: 967, 9.19, 9.48, 9.57, 9.48, 9.48, 9.48.
    - 9.67 + 9.19 + 9.48 + 9.57 + 9.48 + 9.48 + 9.48 = 66.35
    - 66.35/7 = 9.478
    - Round your final answer to the nearest hundredth. The mean = 9.48
- Now calculate and record the mean for Run 1 in column C on both your Carbon Dioxide Specialist worksheet and your report form.

7. Calculate the median for the data:

- The median is the number that is in the middle of a set of data. Half the scores are above the median and half the scores are below.
- Using the numbers in the sample data, list the numbers in ascending numerical order (from smallest to largest number): 9.19, 9.48, 9.48, 9.48, 9.48, 9.57, 9.67.
- Identify the number in the middle.
- The median = 9.48.
- Now calculate and record the median for Run 1 in column D on your Carbon Dioxide Specialist worksheet and also on your report form.

8. Calculate the mode for the data:

- The mode is the number that appears most often in a set of data.
- For example, in the data set of 9.67, 9.19, 9.48, 9.57, 9.48, 9.48, 9.48:
    - The mode = 9.48
- Now calculate and record the mode for Run 1 in column E on your Carbon Dioxide Specialist worksheet and on your report form.

Tasks for Carbon Dioxide Specialist Member Two

9. Use the data provided by Carbon Dioxide Specialist member one to create a box-and-whiskers plot for the Run 1 data. Graph the plot in column B of your worksheet:
    - Look at the data in ascending numerical order (from smallest to largest numbers).
    - Label the median on your gridlines.
    - Identify the lower and upper quartiles and use these values to construct the box.
    - Identify the smallest and largest values and use these values to draw the whiskers part of the plot
10. Record the values for mean, median, and mode for Run 1 on your carbon dioxide worksheet and your report form.

Tasks for Carbon Dioxide Specialist Member Three (optional member)

11. Bring the report form to the Communications Specialist.
12. The Communications Specialist will verify the data with mission control.
13. If the Communications Specialist approves the data, begin working on Run 2 of the simulator.

Note: If there are only two Carbon Dioxide Specialists, member one should bring the report form to your team's Communications Specialist.

Repeat this entire procedure for successive runs.