
Today: Introduction to Basic Statistics – Presenting Data

Please go to Update page and Course page to see information about class and to keep up to date. The links are in front page of canvas and also on <http://nature-lover.net/math>. You can see old notes from spring 25 etc at this website. It will help you prepare for class.

Today: Presenting data using charts

Quiz 6 friday this week: adding numbers in geometric sequence, statistics – collecting and presenting data.

PLEASE STUDY THESE NOTES AND WORK ON PRACTICE PROBLEMS AT THE END OF EACH NOTES.

Last time: Talked about collecting data and organizing data.

What is statistics?

Collection, Organization, Presentation, Analysis, Prediction

Some places where statistics was used in a big way:

- Census
- Economy
- Election
- Spread of Disease

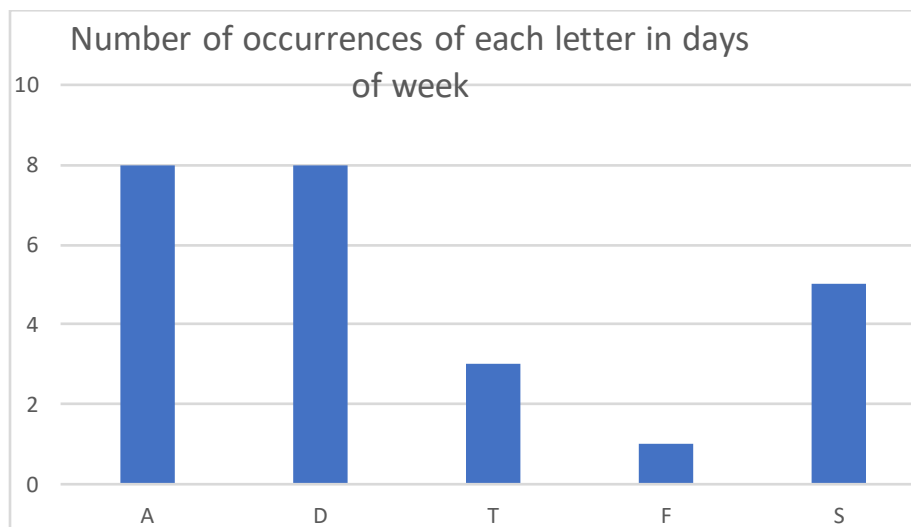
- Weather and Climate

Collecting Data: Need to collect a representative sample when it is not possible to gather all the data. Especially, in election polling, sampling plays a big role.

Next step : Presenting data

1. Bar graph

A – 8, D – 8, S – 5, F – 1, T - 3

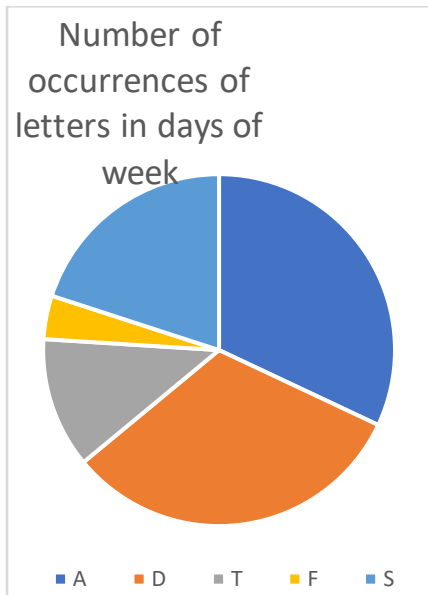


The above chart shows the number of occurrences of the letters A, D, T, F and S in the days of the week. For example, F occurs only once, on Friday.

Line graph and Pie chart below.

2. Pie Chart

A – 8, D – 8, S – 5, F – 1, T - 3



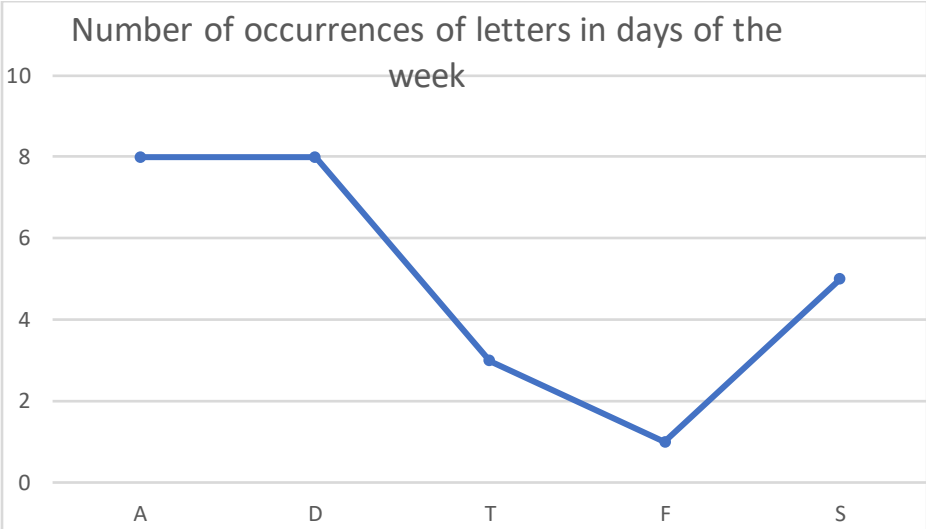
How are these areas calculated?

For example, A is dark blue. It appears in 8 total times.

Total: $8+8+3+2+5 = 26$.

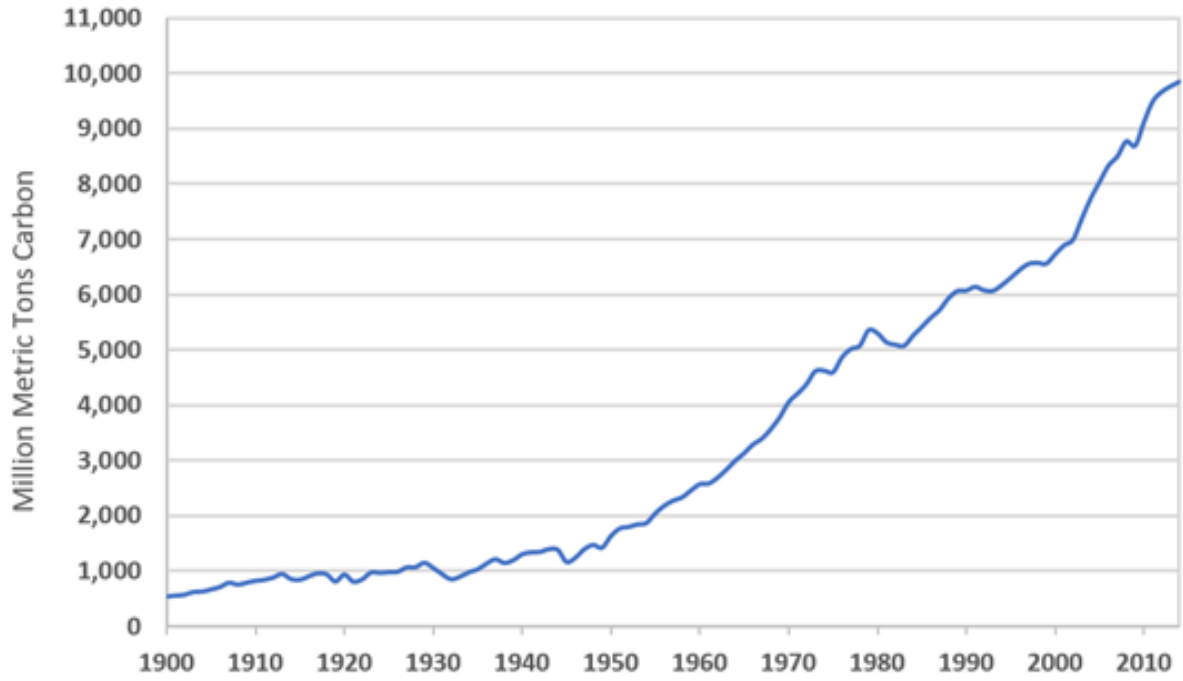
So share of A in the pie is $8/26 = 30.7\%$ or close to $1/3$ of pie.

3. Line graph



MAIN POINT: PRESENT DATA IN A WAY THAT HELPS PEOPLE TO UNDERSTAND WHAT IS HAPPENING

Global Carbon Emissions from Fossil Fuels, 1900-2014



Example: Make a pie chart, bar graph and line graph for the following table showing the Carbon dioxide emissions by different kinds of flight (airplane) operations, in million metric tonnes (MMT):

Dedicated freighter:	70
Freight operations:	171
Passenger (narrow body):	395
Passenger (wide body):	305
Passenger (regional):	47

Graph next page

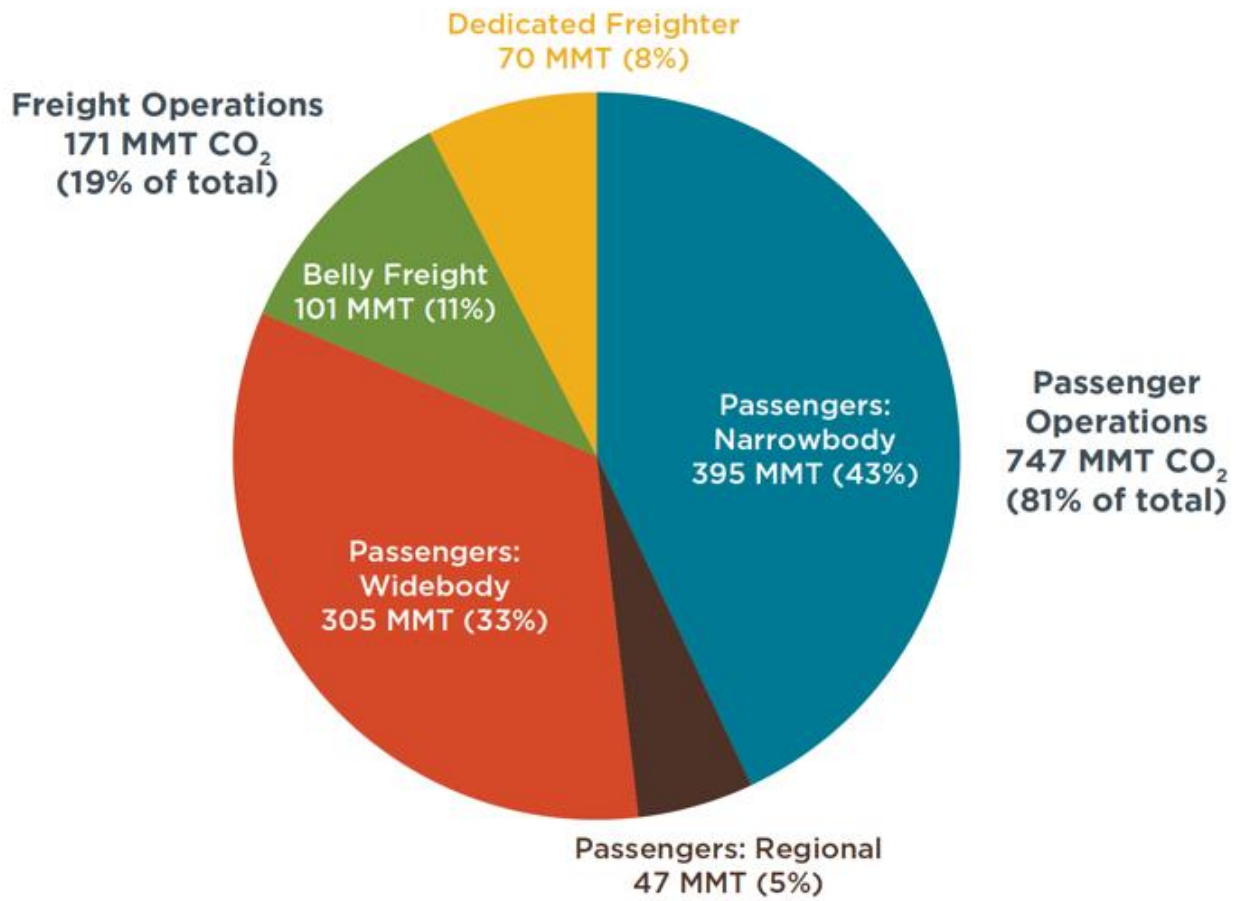
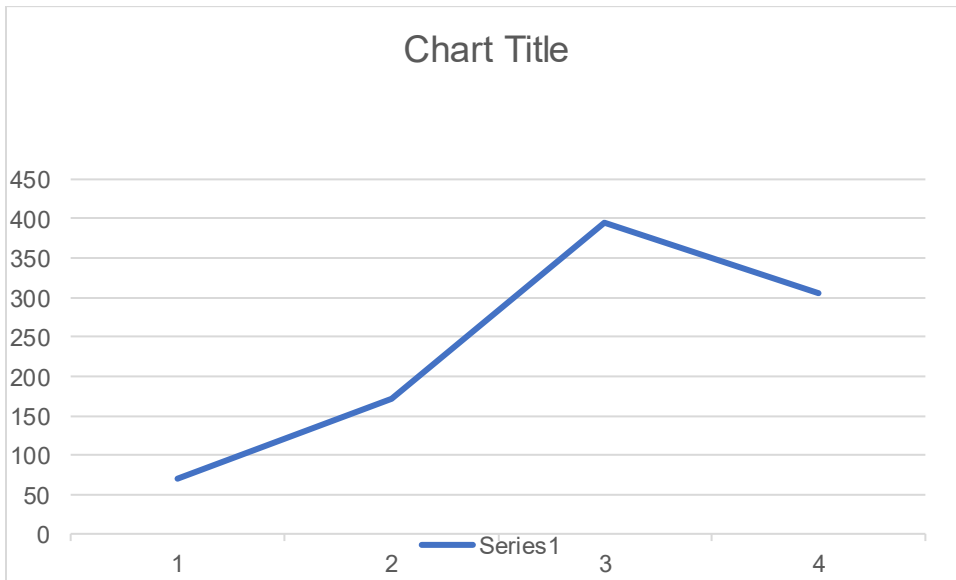


Figure 1. CO₂ emissions in 2018 by operations and aircraft class

Bar graph and Line graph next page



PRACTICE QUESTIONS FOR TODAY

1: Create a bar chart and line graph for the following table of data (The table shows minimal arctic ice-cap area in million square meters)

2: Calculate the average area in the years from 80 to 84, and the same for 85 to 89, 90 to 94, 95 to 99, 00 to 04, 05 to 09, 10 to 14, 15 to 19, 20 to 24 and make a line graph of the averages. What can you conclude?

From 1980 to 2024, arctic minimum ice-cap area

Year	Area
1980	7.54
1981	6.90
1982	7.17
1983	7.22
1984	6.43
1985	6.49
1986	7.16
1987	6.96
1988	7.13
1989	6.91
1990	6.04
1991	6.30
1992	7.21
1993	6.18
1994	6.96
1995	6.03
1996	7.19
1997	6.63
1998	6.35
1999	5.76

2000	5.98
2001	6.60
2002	5.64
2003	6.01
2004	5.79
2005	5.32
2006	5.77
2007	4.16
2008	4.59
2009	5.12
2010	4.62
2011	4.34
2012	3.39
2013	5.05
2014	5.03
2015	4.43
2016	4.17
2017	4.67
2018	4.66
2019	4.19
2020	3.82
2021	4.77
2022	4.70
2023	4.23
2024	4.28