# Homework assignment 1

1. For commercial banks in each state, the U.S. Federal Deposit Insurance Corporation has listed their total deposits (billions of dollars) as follows.

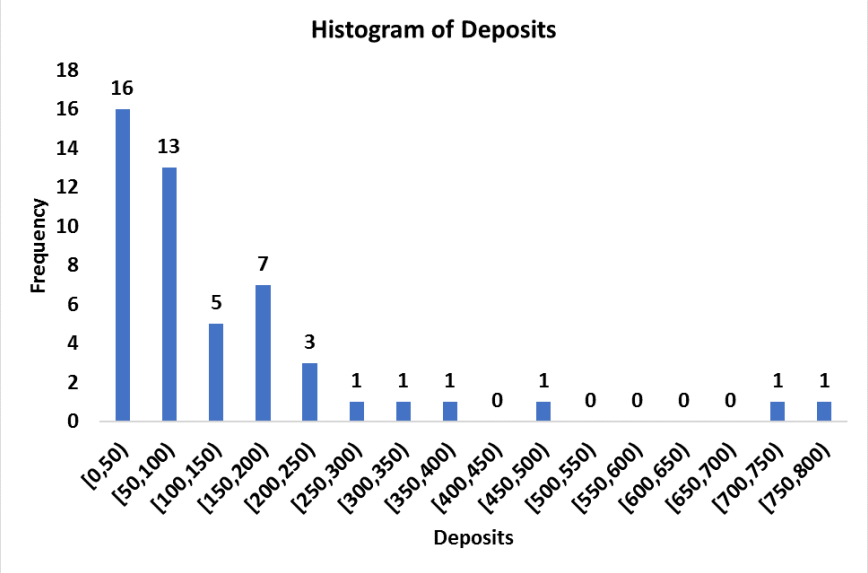
| | Deposits | | Deposits | | Deposits |
|---|---|---|---|---|---|
| AL | 74.3 | LA | 73.0 | OH | 209.1 |
| AK | 6.9 | ME | 20.0 | OK | 57.4 |
| AZ | 80.0 | MD | 95.0 | OR | 47.9 |
| AR | 47.4 | MA | 180.8 | PA | 259.4 |
| CA | 751.0 | MI | 154.7 | RI | 25.5 |
| CO | 81.3 | MN | 106.2 | SC | 64.1 |
| CT | 81.0 | MS | 41.6 | SD | 63.3 |
| DE | 160.2 | MO | 102.6 | TN | 107.2 |
| FL | 373.9 | MT | 14.6 | TX | 450.0 |
| GA | 177.9 | NE | 36.0 | UT | 181.7 |
| HI | 26.8 | NV | 188.1 | VT | 9.9 |
| ID | 17.7 | NH | 21.5 | VA | 182.2 |
| IL | 338.9 | NJ | 222.5 | WA | 105.7 |
| IN | 88.6 | NM | 21.9 | WV | 25.9 |
| IA | 56.6 | NY | 722.8 | WI | 109.7 |
| KS | 54.0 | NC | 206.3 | WY | 10.6 |
| KY | 63.2 | ND | 13.9 | | |

Using this data:

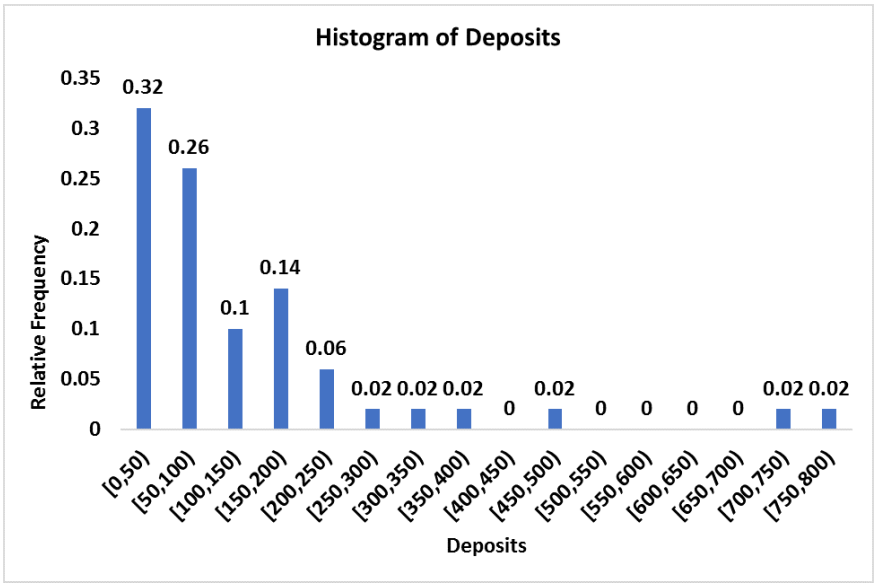
(a) Construct a frequency table and include relative and cumulative frequencies.

| Deposits | Frequency | Relative Frequency | Cumulative Frequency |
|---|---|---|---|
| $[0, 50)$ | 16 | 0.32 | 0.32 |
| $[50, 100)$ | 13 | 0.26 | 0.58 |
| $[100, 150)$ | 5 | 0.1 | 0.68 |
| $[150, 200)$ | 7 | 0.14 | 0.82 |
| $[200, 250)$ | 3 | 0.06 | 0.88 |
| $[250, 300)$ | 1 | 0.02 | 0.9 |
| $[300, 350)$ | 1 | 0.02 | 0.92 |
| $[350, 400)$ | 1 | 0.02 | 0.94 |
| $[400, 450)$ | 0 | 0 | 0.94 |
| $[450, 500)$ | 1 | 0.02 | 0.96 |
| $[500, 550)$ | 0 | 0 | 0.96 |
| $[550, 600)$ | 0 | 0 | 0.96 |
| $[600, 650)$ | 0 | 0 | 0.96 |
| $[650, 700)$ | 0 | 0 | 0.96 |
| $[700, 750)$ | 1 | 0.02 | 0.98 |
| $[750, 800]$ | 1 | 0.02 | 1 |

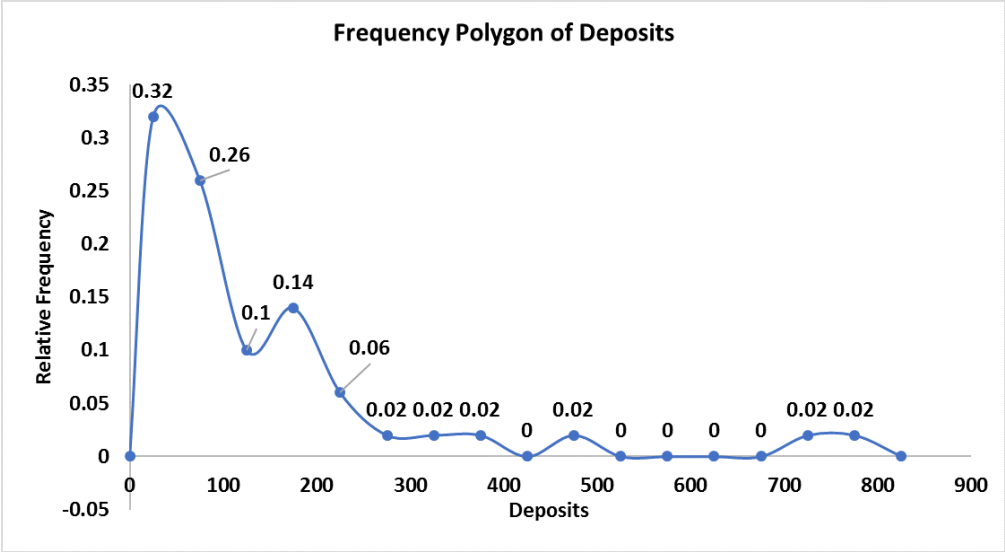
(b) Construct a histogram using the frequency distribution



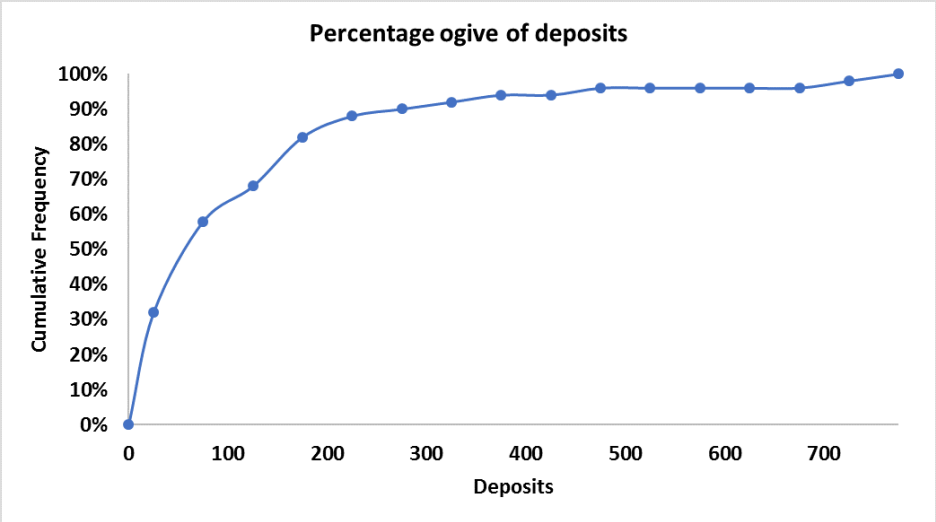

(c) Construct a histogram using relative frequency distribution




(d) Construct a frequency polygon

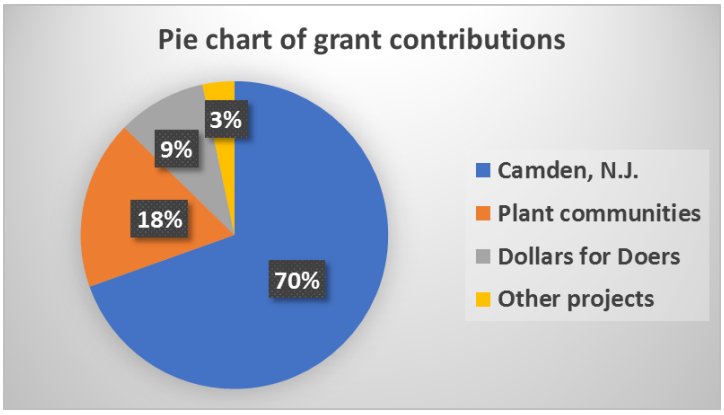



(e) Construct an ogive




2. The Campbell Soup Foundation provided the following amounts in grants: Camden, N.J., $1,336,700; plant communities, $341,500; Dollars for Doers, $179,600; other projects, $64,100. Construct a pie chart to summarize these contributions. Show your work indicating the share of contributions and the corresponding angle on the pie.

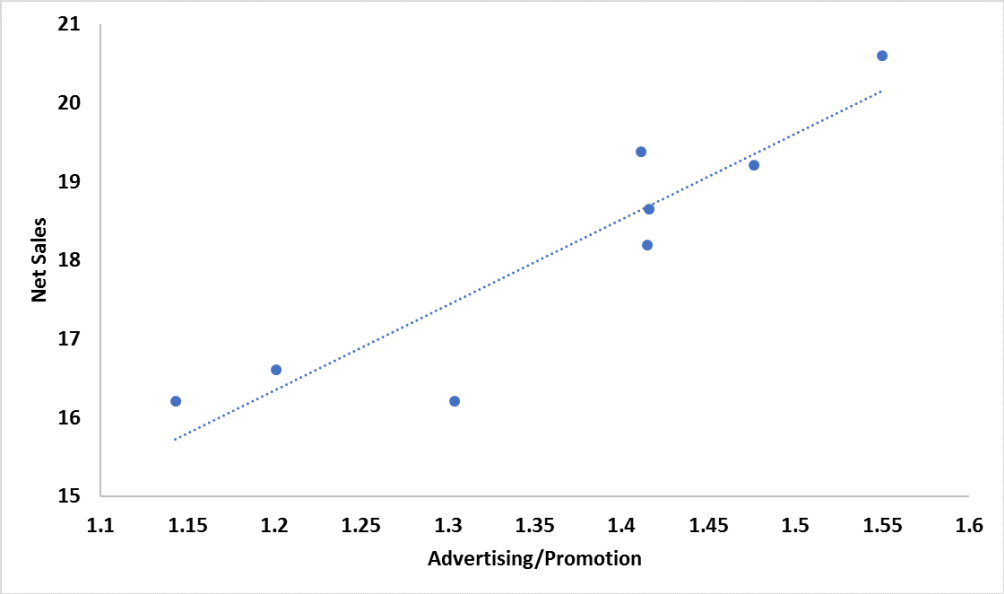
| | Grants | Percentage | Angle |
|---|---|---|---|
| Camden, N.J. | 1336700 | 69.6 | 250.4° |
| Plant communities | 341500 | 17.8 | 64.0° |
| Dollars for Doers | 179600 | 9.3 | 33.6° |
| Other projects | 64100 | 3.3 | 12.0° |
| | 1921900 | 100 | 360° |




3. For the period 2001  2008, the Bristol-Myers Squibb Company, Inc. reported the following amounts (in billions of dollars) for (1) net sales and (2) advertising and product promotion.

| Net Sales | Advertising/Promotion |
|---|---|
| $16.612 | $1.201 |
| 16.208 | 1.143 |
| 18.653 | 1.416 |
| 19.380 | 1.411 |
| 19.207 | 1.476 |
| 16.208 | 1.304 |
| 18.193 | 1.415 |
| 20.597 | 1.550 |

Draw a scatter diagram showing the relationship between sales and advertising. Comment on this relationship.




The chart shows a positive relationship exists between advertising and sales. An increase in advertising tends to be accompanied by increases in sales. However, this does not necessarily prove that increases in advertising cause increases in sales. Actually, companies often allocate advertising budgets as a percentage of either actual or anticipated sales.