

Section 2.1 – Practice Problems

1. The incomes of a sample of 6 local restaurant managers are as follows:

\$41 500, \$44 900, \$39 700, \$62 000, \$58 500, \$53 100

What is the mean, median and mode of the 6 managers?

Mean: $\frac{41500 + 44900 + 39700 + 62000 + 58500 + 53100}{6} = \boxed{\$49950}$

Median: $\frac{44900 + 53100}{2} = \boxed{\$49000}$

Mode: $\boxed{\text{No mode}}$ (all different)

2. The following frequency distributions represents the monthly commissions in dollars for 25 car salespersons at a car lot. Determine the mean median and mode.

Commission in \$	Frequency
$800 \leq x \leq 1600$	3
$1600 \leq x \leq 2400$	4
$2400 \leq x \leq 3200$	6
$3200 \leq x \leq 4000$	12

Mean: Take the midpoint of each interval

$\frac{3(1200) + 4(2000) + 6(2800) + 12(3600)}{25} = \boxed{\$2864}$

Median: from frequency need middle term $\frac{n+1}{2} = \frac{26}{2} = 13$
 13th term is $\boxed{\$2800}$

Mode: $\boxed{\$3600}$

3. The mean age of five people is 39. The ages of four of these people are 33, 45, 27, and 41. Find the age of the fifth person

$\frac{33 + 45 + 27 + 41 + x}{5} = 39 \rightarrow 146 + x = 195$

$\boxed{x = 49}$

4. The mean score of 18 female students on a math test is 72 and the mean score of 14 male students is 66. Find the combined mean score.

$\frac{x_1 + x_2 + \dots + x_{18}}{18} = 72$

$\frac{x_1 + x_2 + x_3 + \dots + x_{14}}{14} = 66$

$\frac{x_1 + x_2 + \dots + x_{32}}{32} = \frac{72(18) + 66(14)}{32} \rightarrow \boxed{69.4}$

5. Determine the mean, median, and mode of the salaries of the staff listed below.

Staff	Salary
One Owner	\$80 000
One Manager	\$60 000
Two Salespeople	\$48 000
Six Technicians	\$44 000

$$\text{Mean: } \frac{1(80000) + 1(60000) + 2(48000) + 6(44000)}{10} = \boxed{\$50000}$$

$$\text{Median: } \frac{n+1}{2} \rightarrow \frac{11}{2} = 5.5$$

so 5th and 6th Term are 44000 so $\boxed{\$44000}$

$$\text{Mode: } \boxed{44000}$$

6. If there are 8 numbers with a mean of 10 and 12 other numbers with a mean of 16, what is the mean of all 20 numbers?

$$\frac{x_1 + \dots + x_8}{8} = 10 \rightarrow x_1 + \dots + x_8 = 80$$

$$\frac{x_1 + \dots + x_{12}}{12} = 16 \rightarrow x_1 + \dots + x_{12} = 192$$

$$\frac{x_1 + x_2 + \dots + x_{20}}{20} = \frac{80 + 192}{20} = \boxed{13.6}$$

7. If the mean of 50 numbers is 18 and the mean of the first 30 numbers is 16, what is the mean of the last 20 numbers?

$$\frac{x_1 + x_2 + \dots + x_{50}}{50} = 18 \rightarrow x_1 + \dots + x_{50} = 900$$

$$\frac{x_1 + x_2 + \dots + x_{30}}{30} = 16 \rightarrow x_1 + \dots + x_{30} = 480$$

$$\frac{x_{31} + x_{32} + \dots + x_{50}}{20} = \frac{420}{20} \rightarrow \boxed{21}$$

8. The mean of 50 numbers is 38. If two of the numbers, say 45 and 55, are removed, what is the mean of the remaining numbers?

$$S_{50} = 50 \cdot 38 = 1900$$

$$S_{48} = 50 \cdot 38 - (45 + 55)$$

$$= 1800$$

$$\text{Mean } \bar{x}_{48} = \frac{1800}{48} = \boxed{37.5}$$