Chapter 2. Real Numbers

Ex. 2.5

Answer 1CU.

When analyzing data, it is helpful to have one number that describes the set of data. Mean, median and mode are used to describe the data because they represent a centralized or middle value.

Answer 2CU.

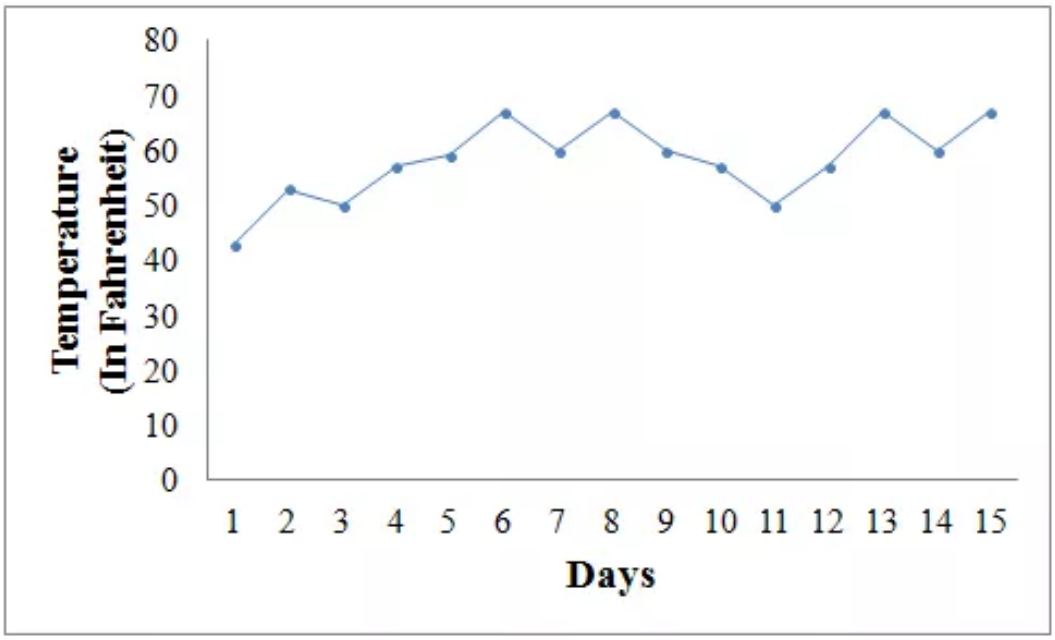
A line graph is a line plotted on a 4 quadrant graph. A line plot is a graph that plots values on a number line. For line graph, we need two variables.

Example: The table below shows daily temperatures for New York City, recorded for 15 days, in degrees Fahrenheit.

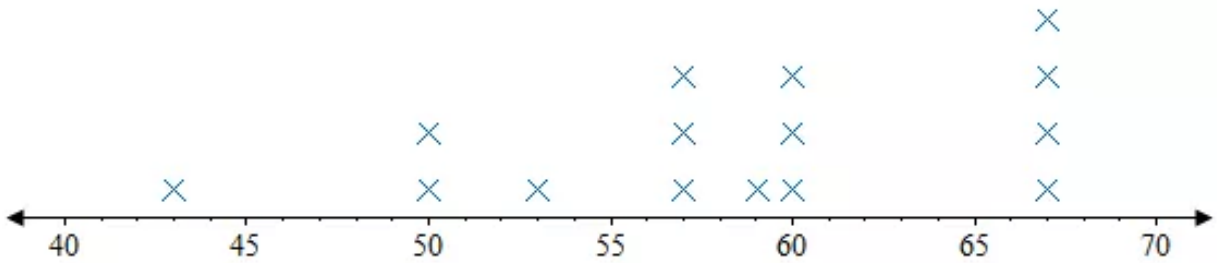
Temperatures in NY City	
Day	**Temperature**
1	43° F
2	53° F
3	50° F
4	57° F
5	59° F
6	67° F
7	60° F
8	67° F
9	60° F

10	57° F
11	50° F
12	57° F
13	67° F
14	60° F
15	67° F

The line graph for daily temperatures for New York City, recorded for 15 days, in degrees Fahrenheit is shown below.



The line plot for daily temperatures for New York City, recorded for 15 days, in degrees Fahrenheit is shown below. The lowest temperature is 43° F and the highest temperature is 67° F. So use a scale that includes those values. Place an × above each value for each occurrence.



Temperature
(In Fahrenheit)

From line graph, we can find the temperature of a particular day but line plot represents the number of occurrence of temperatures in the data.

Answer 2RM.

The footnotes give information about specific items within the table. Here footnote "Includes overnight visitors" gives information about number of visitors. It tells us that in the table, number of visitors include overnight visitors also.

Answer 3CU.

When there are extreme high or extreme low values in the data, we use median as a measure of central tendency. Extreme high or low values can affect the mean, while not affecting the median.

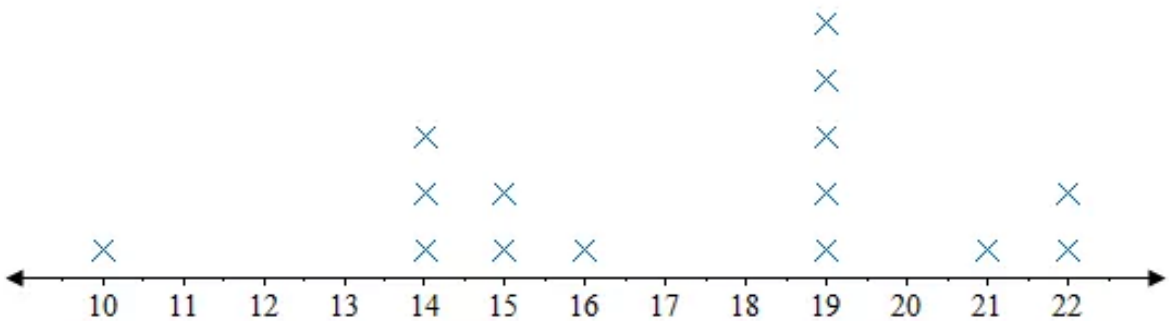
Example: Consider the data set 10, 20, 40, 50, 60, 70, 500. In this data set, 500 is the extreme high value. Therefore, median is a better representation than the mean for this data set.

Answer 3RM.

The headnote of the table is "State Parks and Recreation Areas for Selected States, 1999". From headnote, data was collected in 1999.

Answer 4CU.

The lowest value is 10 and the highest value is 22. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



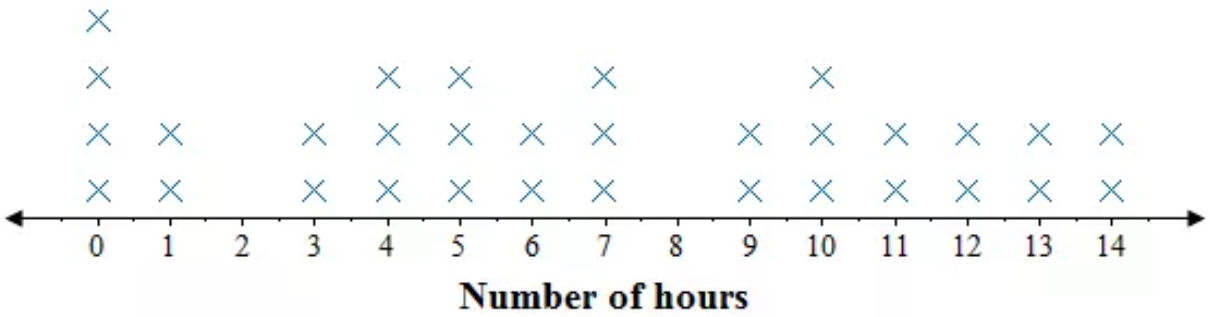
Looking at the line plot, we can easily see that 19 occurred most frequently in the given data set.

Answer 4RM.

If the numerical data are too large, unit indicators are used to save space. In this table, unit indicator is thousands. This means multiply the value by 1000 to find the data value. For example, in the table, number of visitors 9563 means 9,563,000 visitors.

Answer 5CU.

The lowest value is 0 and the highest value is 14. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Answer 5RM.

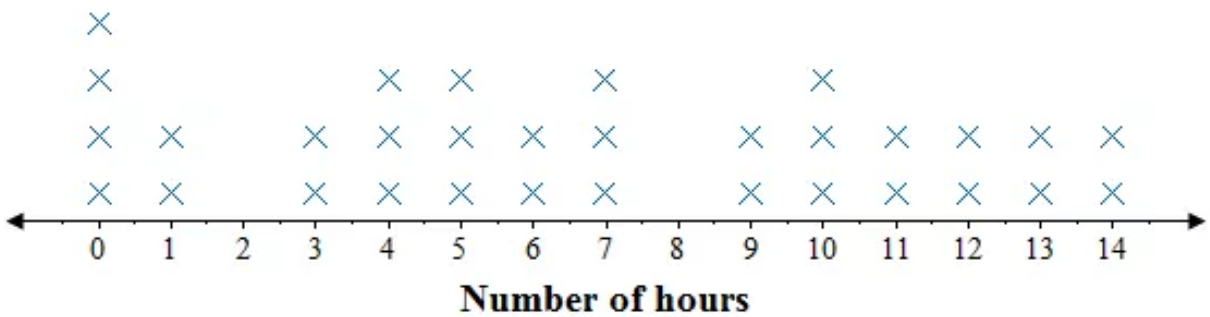
To find the number of acres of state parks and recreation areas New York have, the following steps can be used.

1. From the table, the number that corresponds to New York Acreage is 1016.
2. The unit indicator is thousands.
3. Multiply 1016 by 1000 to find the data value.

4. The number of acres of state parks and recreation areas New York have is 1,016,000 acres.

Answer 6CU.

The lowest value is 0 and the highest value is 14. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Looking at the line plot, we can easily see that 0 occurred most frequently in the given data set.

Answer 6RM.

From the table, the greatest number of visitors is 76,736. The state that corresponds to greatest number of visitors is $\boxed{\text{California}}$. To find how many people visited California's parks and recreation areas in 1999, following steps can be used.

1. From the table, the number of visitors that corresponds to California is 76,736.

2. The unit indicator is thousands.

3. Multiply 76,736 by 1000 to find the data value.

$$76,736 \times 1000 = \boxed{76,736,000}$$

4. The number of visitors that visited California's parks and recreation areas in 1999 is $76,736,000$.

Answer 7CU.

To find the mean of the data, add the data and divide by number of terms.

$$\begin{aligned} mean &= \frac{7+4+\ldots+6+5}{32} \\ &= \frac{216}{32} \\ &= \boxed{6.75} \end{aligned}$$

To find the median of the data, first arrange the data in ascending order.

0, 0, 0, 0, 1, 1, 3, 3, 4, 4, 4, 5, 5, 5, 6, 6, 7, 7, 7, 9, 9, 10, 10, 10, 11, 11, 12, 12, 13, 13, 14, 14

The median is the mean of two middle values of sorted data.

$$\begin{aligned} median &= \frac{\left(\frac{n}{2}\right)^{th} value + \left(\frac{n}{2}+1\right)^{th} value}{2} \\ &= \frac{\left(\frac{32}{2}\right)^{th} value + \left(\frac{32}{2}+1\right)^{th} value}{2} \\ &= \frac{16^{th}\ value + 17^{th}\ value}{2} \\ &= \frac{6+7}{2} \\ &= \boxed{6.5} \end{aligned}$$

The mode of the data is most occurred value in the data. In the given data, 0 occurred most of the times.

$$mode = \boxed{0}$$

The $\boxed{\text{mean and median}}$ can be used to best represent the data. The mode for the data is too low.

Answer 8CU.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 68 would have a stem of 6 and a leaf of 8. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
6	46888
7	1236
8	01688
9	3

Answer 9CU.

In a given stem-and-leaf plot, the least value is 9.3 and the greatest value is 12.9. The difference between the least and greatest values is the difference between 9.3 and 12.9.

$$12.9 - 9.3 = \boxed{3.6}$$

The difference between the least and greatest values is 3.6.

Answer 10CU.

First we find the complete data set from the stem-leaf-plot.

9.3, 9.5, 9.5, 10.2, 10.2, 10.5, 10.8, 11.5, 11.8, 11.8, 11.9, 11.9, 11.9, 12.0, 12.1, 12.7, 12.8, 12.9

To find the mean of the data, add the data and divide by number of terms.

$$\begin{aligned} mean &= \frac{9.3+9.5+\ldots+12.8+12.9}{18} \\ &= \frac{203.3}{18} \\ &= \boxed{11.29} \end{aligned}$$

The median is the mean of two middle values of sorted data.

$$\begin{aligned} median &= \frac{\left(\frac{n}{2}\right)^{th} value + \left(\frac{n}{2}+1\right)^{th} value}{2} \\ &= \frac{\left(\frac{18}{2}\right)^{th} value + \left(\frac{18}{2}+1\right)^{th} value}{2} \\ &= \frac{9^{th}\ value + 10^{th}\ value}{2} \\ &= \frac{11.8+11.8}{2} \\ &= \boxed{11.8} \end{aligned}$$

The mode of the data is most occurred value in the data. In the given data, 11.9 occurred most of the times.

$$mode = \boxed{11.9}$$

The $\boxed{\text{mean, median and mode}}$ can be used to best represent the data because all three are approximately same.

Answer 11CU.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 54 would have a stem of 5 and a leaf of 4. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
5	4556
6	0149
7	03578
8	0035888
9	0
10	025
11	0

Answer 12CU.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 54 would have a stem of 5 and a leaf of 4. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
5	4556
6	0149
7	03578
8	0035888
9	0
10	025
11	0

The most frequent value is $\boxed{88}$.

Answer 1CU.

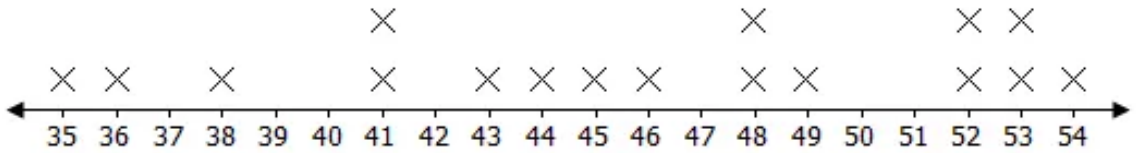
In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 54 would have a stem of 5 and a leaf of 4. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
5	4556
6	0149
7	03578
8	0035888
9	0
10	025
11	0

The most frequent value or mode is $\boxed{88}$. The stem-leaf-plot is unimodal and approximately symmetric. Mode is located in the center of the majority of the data. The mode best describe the set of data.

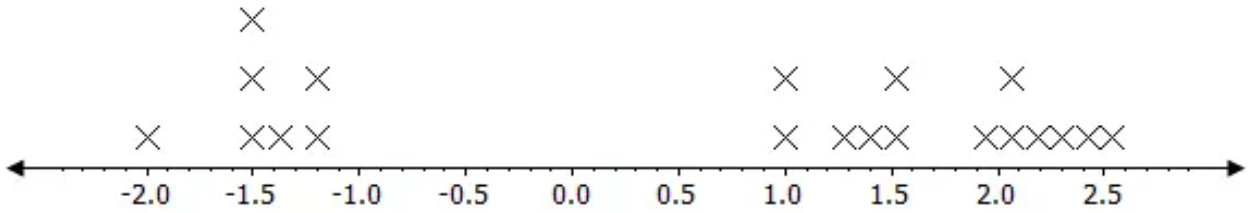
Answer 14PA.

The lowest value is 35 and the highest value is 54. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



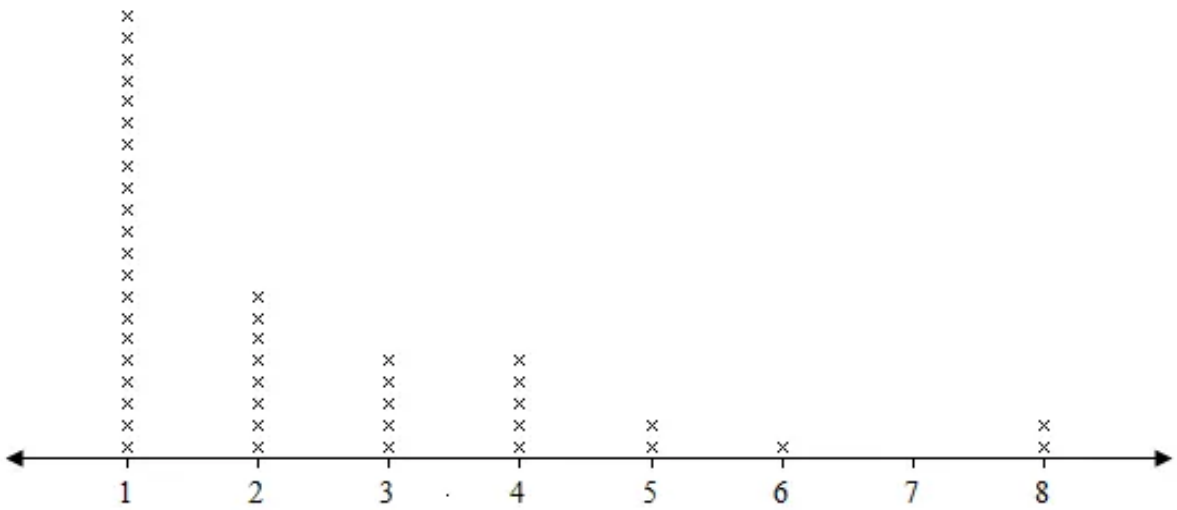
Answer 15PA.

The lowest value is -2.0 and the highest value is 2.5. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



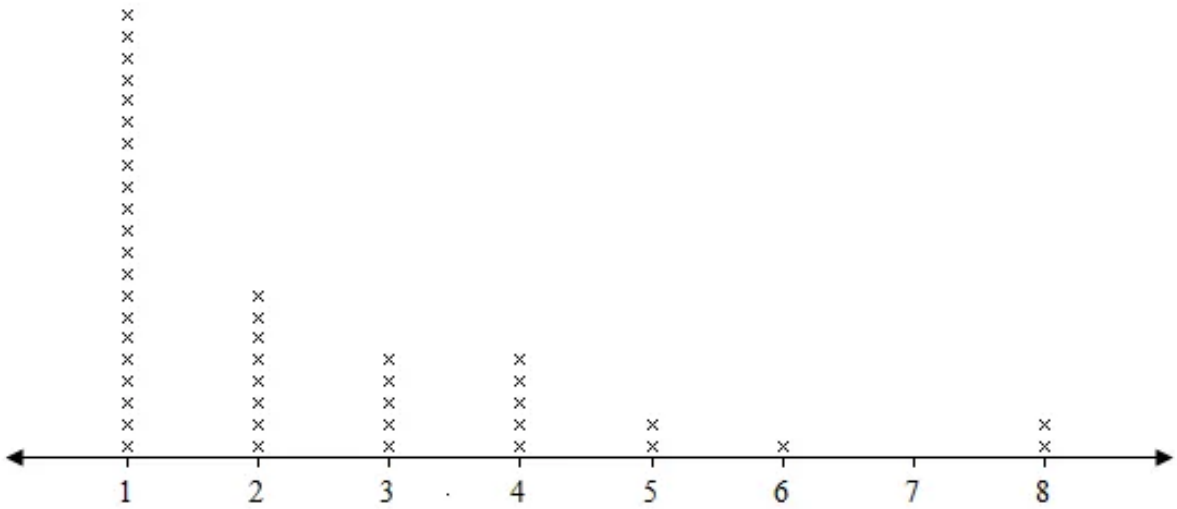
Answer 16PA.

The lowest value is 1 and the highest value is 8. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Answer 17PA.

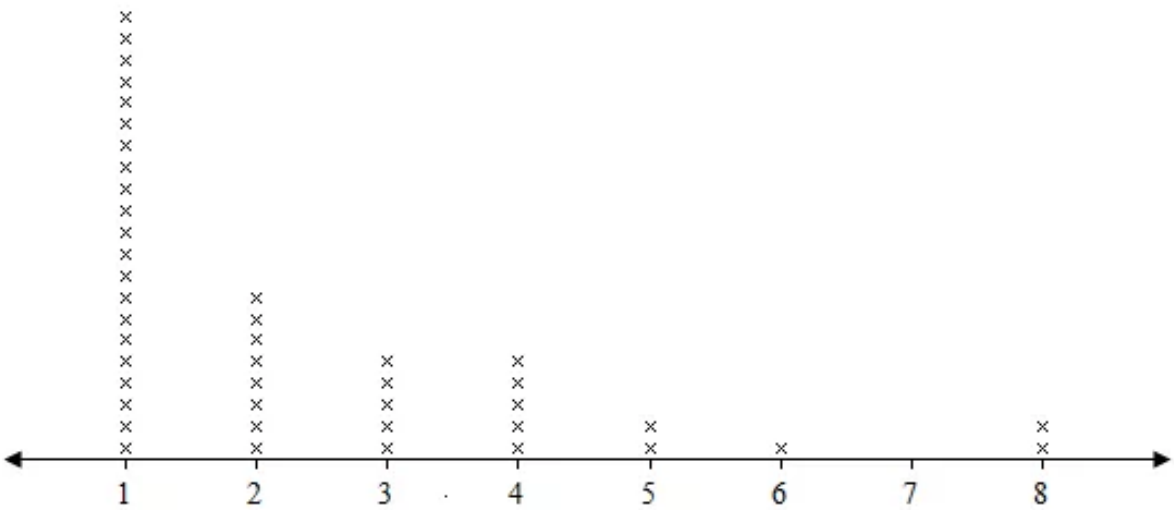
The lowest value is 1 and the highest value is 8. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Number of × on 2, 3, 4, 5, 6, 7, and 8 is 23. Therefore, $\boxed{23}$ teams in the Final Four were not number 1 seeds.

Answer 18PA.

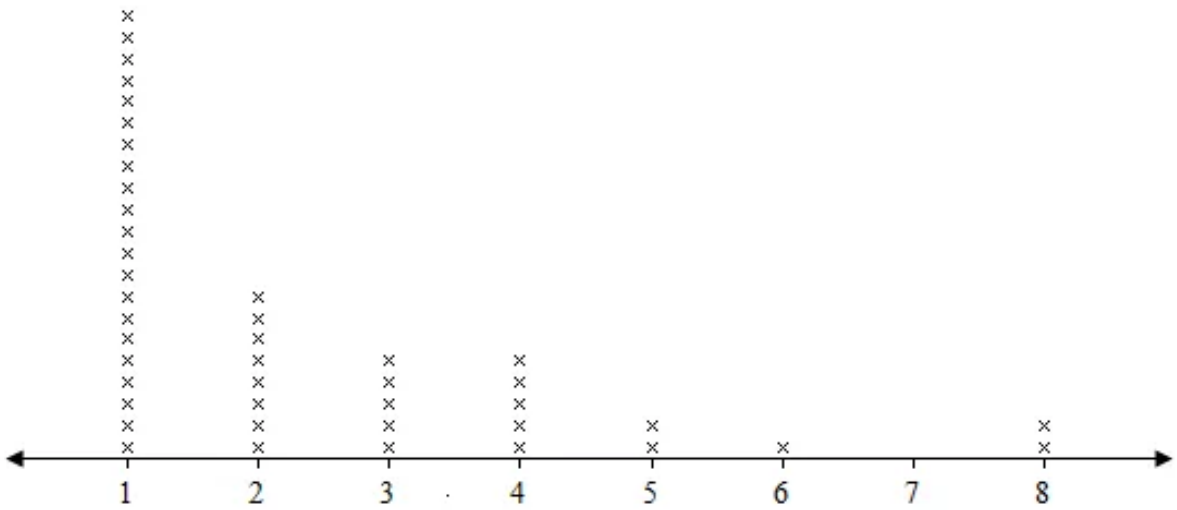
The lowest value is 1 and the highest value is 8. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Number of × on 1 and 2 is 29. Therefore, $\boxed{29}$ teams were seeded higher than third.

Answer 19PA.

The lowest value is 1 and the highest value is 8. So use a scale that includes those values. Place an $\times$ above each value for each occurrence. The line plot for given data set is shown below.



The line plot is skewed to the right. Therefore, $\boxed{\text{median}}$ best represent the set of data.

Answer 20PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is ones. Thus, 5.8 would have a stem of 5 and a leaf of 8. A complete stem-and-leaf plot for the given data is shown below. Here $5|8 = 5.8$.

Stem	Leaf
5	89
6	03569
7	01123

Answer 21PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 18 would have a stem of 1 and a leaf of 8. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
1	88
2	2366689
3	011234
4	7

Answer 22PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is hundred. Thus, 112 would have a stem of 11 and a leaf of 2. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
10	00455667899
11	000011222233444445677788888889
12	000011258
13	4

Answer 23PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is hundred. Thus, 112 would have a stem of 11 and a leaf of 2. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
10	00455667899
11	000011222233444445677788888889
12	000011258
13	4

In the given data, 118 occurred most of the times. Therefore, most occurred value in the data is $\boxed{118}$.

Answer 24PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is hundred. Thus, 112 would have a stem of 11 and a leaf of 2. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
10	00455667899
11	000011222233444445677788888889
12	000011258
13	4

The mode of the data is most occurred value in the data. In the given data, 118 occurred most of the times. Therefore, most occurred value in the data or mode is $\boxed{118}$. The stem-leaf-plot is unimodal and approximately symmetric. Mode is located in the center of the majority of the data. The mode best describe the set of data.

Answer 26PA.

In the given data, 7.5 occurred most of the times. Therefore, most frequent magnitude of these earthquakes is $\boxed{7.5}$.

Answer 27PA.

First we find the complete data set from the stem-leaf-plot.

5.1	5.2	5.2	5.3	5.4	5.8	5.8	5.9	5.9	6.1
6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.7	6.8	7.0
7.1	7.1	7.2	7.2	7.3	7.5	7.5	7.5	7.6	7.8
7.8	8.0	8.0	8.2						

To find the mean of the data, add the data and divide by number of terms.

$$\begin{aligned} mean &= \frac{5.1+5.2+\ldots+8.0+8.2}{34} \\ &= \frac{226.8}{34} \\ &= 6.7 \end{aligned}$$

The median is the mean of two middle values of sorted data.

$$\begin{aligned} median &= \frac{\left(\frac{n}{2}\right)^{th} value + \left(\frac{n}{2}+1\right)^{th} value}{2} \\ &= \frac{\left(\frac{34}{2}\right)^{th} value + \left(\frac{34}{2}+1\right)^{th} value}{2} \\ &= \frac{17^{th}\ value + 18^{th}\ value}{2} \\ &= \frac{6.7+6.7}{2} \\ &= 6.7 \end{aligned}$$

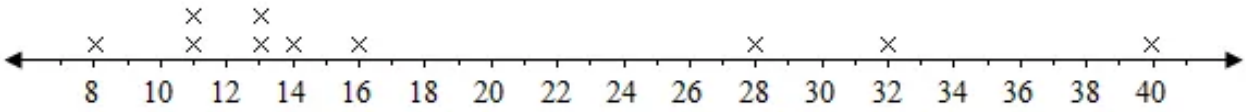
The mode of the data is most occurred value in the data. In the given data, 7.5 occurred most of the times.

$$mode = 7.5$$

The $\boxed{\text{mean and median}}$ can be used to best represent the data because mean and median are located in the center of the majority of the data. Mode is too high.

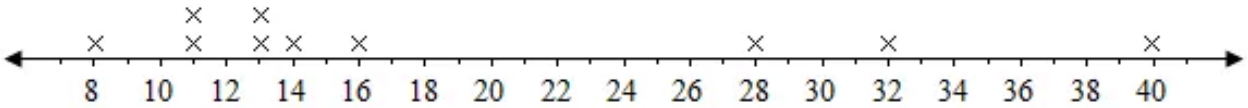
Answer 28PA.

The lowest value is 8 and the highest value is 40. So use a scale that includes those values. Place an $\times$ above each value for each occurrence. The line plot for given data set is shown below.



Answer 29PA.

The lowest value is 8 and the highest value is 40. So use a scale that includes those values. Place an $\times$ above each value for each occurrence. The line plot for given data set is shown below.



Number of $\times$ below 25 is 7. Therefore, 7 countries won fewer than 25 gold medals.

Answer 30PA.

First arrange the data in ascending order.

$8,\ 11,\ 11,\ 13,\ 13,\ 14,\ 16,\ 28,\ 32,\ 40$

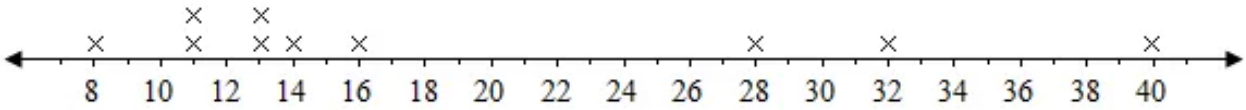
The median is the mean of two middle values of sorted data.

$$\begin{aligned} median &= \frac{\left(\frac{n}{2}\right)^{th}\ value + \left(\frac{n}{2}+1\right)^{th}\ value}{2} \\ &= \frac{\left(\frac{10}{2}\right)^{th}\ value + \left(\frac{10}{2}+1\right)^{th}\ value}{2} \\ &= \frac{5^{th}\ value + 6^{th}\ value}{2} \\ &= \frac{13+14}{2} \\ &= \boxed{13.5} \end{aligned}$$

The median number of gold medals won by a country is 13.5.

Answer 31PA.

The lowest value is 8 and the highest value is 40. So use a scale that includes those values. Place an × above each value for each occurrence. The line plot for given data set is shown below.



Since line plot is highly skewed to higher values, median will be best measure to describe this set of data.

Answer 32PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 25 would have a stem of 2 and a leaf of 5. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
1	688999
2	0000011233456888999999
3	00001334467
4	37

Answer 33PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 25 would have a stem of 2 and a leaf of 5. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
1	688999
2	00000112334568899999
3	00001334467
4	37

From the above stem-leaf-plot, number of vehicles get more than 25 miles per gallon is $\boxed{22}$.

Answer 34PA.

First arrange the data in ascending order.

16	18	18	19	19	19	20	20	20	20
20	21	21	22	23	23	24	25	26	28
28	28	29	29	29	29	29	30	30	30
30	31	33	33	34	34	36	37	43	47

To find the mean of the data, add the data and divide by number of terms.

$$\begin{aligned} mean &= \frac{16+18+\ldots+43+47}{40} \\ &= \frac{1071}{40} \\ &= 26.8 \end{aligned}$$

The median is the mean of two middle values of sorted data.

$$\begin{aligned} median &= \frac{\left(\frac{n}{2}\right)^{th} value + \left(\frac{n}{2}+1\right)^{th} value}{2} \\ &= \frac{\left(\frac{40}{2}\right)^{th} value + \left(\frac{40}{2}+1\right)^{th} value}{2} \\ &= \frac{20^{th}\ value + 21^{st}\ value}{2} \end{aligned}$$

$$= \frac{28+28}{2}$$
$$= 28$$

The mode of the data is most occurred value in the data. In the given data, 20 occurred most of the times.

$$mode = 20$$

The $\boxed{\text{mean and median}}$ can be used to best describe the fuel economy of the vehicles because mean and median are located in the center of the majority of the data. Mode is too low.

Answer 35PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 59 would have a stem of 5 and a leaf of 9. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
3	047
4	
5	29
6	27
7	7
8	45

Answer 36PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 59 would have a stem of 5 and a leaf of 9. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
3	047
4	
5	29
6	27
7	7
8	45

From the above stem-and-leaf-plot, for stem 3, there are maximum leaves. Therefore, the interval $\boxed{30\text{-}39}$ has most of the values.

Answer 37PA.

In a stem-and-leaf plot, the greatest common place value is used for the stems. The numbers in the next greatest place value are used to form the leaves. In the given data, the greatest place value is tens. Thus, 59 would have a stem of 5 and a leaf of 9. A complete stem-and-leaf plot for the given data is shown below.

Stem	Leaf
3	047
4	
5	29
6	27
7	7
8	45

From the above stem-and-leaf-plot, all values occur only once. Therefore, these data do not contain mode.

Answer 38PA.

The set of 12 numbers which has $mean = 7$, $median = 6$ and $\text{mode} = 8$.

$\boxed{2, 3, 4, 5, 5, 6, 6, 8, 8, 8, 12, 17}$

To find the mean of the data, add the data and divide by number of terms.

$$mean = \frac{2+3+4+5+5+6+6+8+8+8+12+17}{12}$$
$$= \frac{84}{12}$$
$$= \boxed{7}$$

The median is the mean of two middle values of sorted data.

$$median = \frac{\left(\frac{n}{2}\right)^{th} value + \left(\frac{n}{2}+1\right)^{th} value}{2}$$
$$= \frac{\left(\frac{12}{2}\right)^{th} value + \left(\frac{12}{2}+1\right)^{th} value}{2}$$
$$= \frac{6^{th}\ value + 7^{th}\ value}{2}$$
$$= \frac{6+6}{2}$$
$$= \boxed{6}$$

The mode of the data is most occurred value in the data. In the given data, 8 occurred most of the times.

$mode = \boxed{8}$

Answer 39PA.

The median income for high school graduates for males is $\$33,184$ and for females is $\$23,061$. The difference between men's and women's salaries for high school graduates is given below.

$\$33,184 - \$23,061 = \boxed{\$10,123}$

The median income for some college for males is $\$39,221$ and for females is $\$27,757$. The difference between men's and women's salaries for some college is given below.

$$\$39,221 - \$27,757 = \boxed{\$11,464}$$

The median income for bachelor's degree for males is $\$60,201$ and for females is $\$41,747$. The difference between men's and women's salaries for bachelor's degree is given below.

$$\$60,201 - \$41,747 = \boxed{\$18,454}$$

The median income for doctoral degree for males is $\$81,687$ and for females is $\$60,079$. The difference between men's and women's salaries for doctoral degree is given below.

$$\$81,687 - \$60,079 = \boxed{\$21,608}$$

a

Answer 40PA.

In these graphs, the bar for males for each education level is larger than the bar for females. This indicates that the men's salary is always higher than women's salary for each education level. The difference in bar increases as education level increases. This means, higher the education level, larger the difference in salaries of men and women.

Answer 41PA.

The distribution of salaries is always highly skewed towards the higher values. There are always few people whose salary is much greater than the salary of most of the people. For example, in a company, there are 100 people, 99 employees and 1 CEO. The salary of CEO is $50,000 while the salaries of 99 employees range between $6,000 and $10,000. The salary of CEO is much higher than the salaries of 99 employees. If we use mean as a measure of central tendency, it would be greater than the highest salary of 99 employees, hence misleading. Therefore, we should use median to represent the salary rather than mean.

Answer 42PA.

When analyzing data, it is helpful to have one number that describes the set of data. Mean, median and mode are used to describe the data because they represent a centralized or middle value. A line plot can show how many male students in your class have the most popular names for the decade in which they born. A seller, who sells personalized T-shirts, can use this information to decide his inventory. He can decide which name's personalized T-shirt should be maximum in stock and which name's personalized T-shirt should be minimum in stock. He can decide which name's maximum number of personalized T-shirt should be in stock and which name's minimum number of personalized T-shirt should be in stock.

Answer 43PA.

From the given line plot, there are 4 butterflies having wingspan 7.5 inch, 3 butterflies having wingspan 7.9 inch, 1 butterfly having wingspan 8.3 inch, 1 butterfly having wingspan 9.1 inch and 1 butterfly having wingspan 11 inch. To find the mean of the data, add all the wingspans and divide by number of butterflies.

$$\begin{aligned} mean &= \frac{4(7.5)+3(7.9)+8.3+9.1+11}{10} \\ &= \frac{30+23.7+8.3+9.1+11}{10} \\ &= \frac{82.1}{10} \\ &= 8.21 \text{ inch} \end{aligned}$$

Hence, the correct option is $\boxed{C}$.

Answer 44PA.

From the given line plot, the greatest wingspan is 11 inch and least wingspan is 7.5 inch. The difference between the greatest and least wingspan is $11-7.5=3.5$ inch. Most of the wingspans (8 out of 10) are in the 7.5 inch to 8.5 inch interval. The mode of the data is most occurred value in the data. In the given data, 7.5 occurred most of the times. Therefore, the mode of the data is 7.5 inch. Only 3 out of 10 wingspans are greater than 8 inches.

Hence, the correct option is $\boxed{C}$.

Answer 45MYS.

The sign of the quotient of two numbers having different signs is negative. In the given problem, first number 56 is positive while second number -14 is negative. Therefore,

$$56 \div (-14) = \boxed{-4}$$

The quotient is negative.

Answer 46MYS.

The sign of the quotient of two numbers having same signs is positive. In the given problem, first number -72 is negative and second number -12 is also negative. Therefore,

$$-72 \div (-12) = \boxed{6}$$

The quotient is positive.

Answer 47MYS.

The sign of the quotient of two numbers having different signs is negative. In the given problem, first number -40.5 is negative while second number 3 is positive. Therefore,

$$-40.5 \div 3 = \boxed{-13.5}$$

The quotient is negative.

Answer 48MYS.

The sign of the quotient of two numbers having same signs is positive. In the given problem, first number 102 is positive and second number 6.8 is also positive. Therefore,

$$102 \div 6.8 = \boxed{15}$$

The quotient is positive.

Answer 49MYS.

To solve the expression, first multiply -2 and $6x$.

$$-2(6x)-5x=-12x-5x$$

To add expressions with same sign, add their absolute numeric multiples. The sum has the same sign as the addends. Here both values have negative sign.

$$\begin{aligned}-12x-5x&=(-12x)+(-5x)\\&=\boxed{-17x}\end{aligned}$$

Answer 50MYS.

To solve the expression, first multiply $3x$ with $-7y$, and also $-4x$ with $5y$.

$$3x(-7y)-4x(5y)=-21xy-20xy$$

To add expressions with same sign, add their absolute numeric multiples. The sum has the same sign as the addends. Here both values have negative sign.

$$\begin{aligned}-21xy-20xy&=(-21xy)+(-20xy)\\&=\boxed{-41xy}\end{aligned}$$

Answer 51MYS.

To solve the expression, first subtract $2t$ from $3t$ and multiply the difference with 5. Also multiply 2 with $4t$.

$$5(3t-2t)-2(4t)=5t-8t$$

To add expressions with opposite sign, subtract lesser absolute numeric multiple from the greater absolute numeric multiple. The sum has the same sign as the number with the greater absolute multiple. Here greater absolute numeric multiple (-8) has negative sign.

$$\begin{aligned}5t-8t&=(5t)+(-8t)\\&=\boxed{-3t}\end{aligned}$$

Answer 52MYS.

Kara has d dollars in her saving account. If she adds x dollars per week for 12 weeks, the amount added in 12 weeks will be $12(x)=12x$. Therefore, the algebraic expression to represent the amount of money in Kara's saving account is shown below.

$\boxed{d+12x}$

Answer 53MYS.

Given $x=5$ and $y=16$. First plug values of *x* and *y* in the given expression.

$$y-3x=16-3(5)$$

Multiply 3 with 5.

$$\begin{aligned}16-3(5)&=16-15\\&=16+(-15)\end{aligned}$$

To add rational numbers with different signs, subtract the lesser absolute value (15) from the greater absolute value (16). The sum has the same sign as the number with the greater absolute value. Here greater absolute value, (16) has positive sign.

$$16+(-15)=\boxed{1}$$

Answer 54MYS.

Given $x=5$ and $z=9$. First plug values of *x* and *z* in the given expression.

$$xz\div 3=5(9)\div 3$$

Multiply 5 with 9.

$$5(9)\div 3=45\div 3$$

Divide 45 by 3.

$$45\div 3=\boxed{15}$$

Answer 55MYS.

Given $x=5$ and $y=16$. First plug values of *x* and *y* in the given expression.

$$2x-x+(y\div 4)=2(5)-5+(16\div 4)$$

Multiply 2 with 5 and solve parentheses.

$$\begin{aligned}2(5)-5+(16\div 4)&=10-5+4\\&=10+4+(-5)\end{aligned}$$

To add rational numbers 10 and 4 having same sign, add their absolute values. The sum has the same sign as the addends. Here both values have positive sign.

$$10+4+(-5)=14+(-5)$$

To add rational numbers with different signs, subtract the lesser absolute value (5) from the greater absolute value (14). The sum has the same sign as the number with the greater absolute value. Here greater absolute value, (14) has positive sign.

$$14+(-5)=\boxed{9}$$

Answer 56MYS.

Given $x=5$, $y=16$ and $z=9$. First plug values of *x*, *y* and *z* in the given expression.

$$\frac{x^2-z}{2y}=\frac{5^2-9}{2(16)}$$

The square of 5 is 25 and multiply 2 with 16 in the denominator.

$$\frac{5^2-9}{2(16)}=\frac{25-9}{32}$$

To add rational numbers with different signs, subtract the lesser absolute value (9) from the greater absolute value (25) in the numerator. The sum has the same sign as the number with the greater absolute value. Here greater absolute value, (25) has positive sign.

$$\frac{25-9}{32}=\frac{16}{32}$$

The fraction bar indicates division. The sign of the quotient of two numbers having same signs is positive. Therefore,

$$\frac{16}{32}=16\div 32$$
$$=\boxed{0.5}$$

Answer 57MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{12}{18}=\frac{6}{9}$$

Now both numerator and denominator are divisible by 3.

$$\frac{6}{9}=\boxed{\frac{2}{3}}$$

Answer 58MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{12}{18}=\frac{6}{9}$$

Now both numerator and denominator are divisible by 3.

$$\frac{6}{9}=\boxed{\frac{2}{3}}$$

Answer 59MYS.

In the given fraction, both numerator and denominator are divisible by 3.

$$\frac{21}{30}=\boxed{\frac{7}{10}}$$

Answer 60MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{42}{48}=\frac{21}{24}$$

Now both numerator and denominator are divisible by 3.

$$\frac{21}{24}=\boxed{\frac{7}{8}}$$

Answer 61MYS.

In the given fraction, both numerator and denominator are divisible by 32.

$$\frac{32}{64}=\boxed{\frac{1}{2}}$$

Answer 62MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{28}{52}=\frac{14}{26}$$

Now both numerator and denominator are again divisible by 2.

$$\frac{14}{26}=\boxed{\frac{7}{13}}$$

Answer 63MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{16}{36}=\frac{8}{18}$$

Now both numerator and denominator are again divisible by 2.

$$\frac{8}{18}=\boxed{\frac{4}{9}}$$

Answer 64MYS.

In the given fraction, both numerator and denominator are divisible by 2.

$$\frac{84}{90}=\frac{42}{45}$$

Now both numerator and denominator are divisible by 3.

$$\frac{42}{45}=\boxed{\frac{14}{15}}$$