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MAKING & USING A STUDY GUIDE

for Exam-2: One-Variable Data Distributions

Study Guide: helps you ①summarize, ②visualize, and analyze③ concepts learned in class

* Warning: simply making a study guide does not guarantee you an A+ on the test.

1 The ages of students in a math class are represented by the data set {30,25,20,40,38,25,24,40,35,26}.
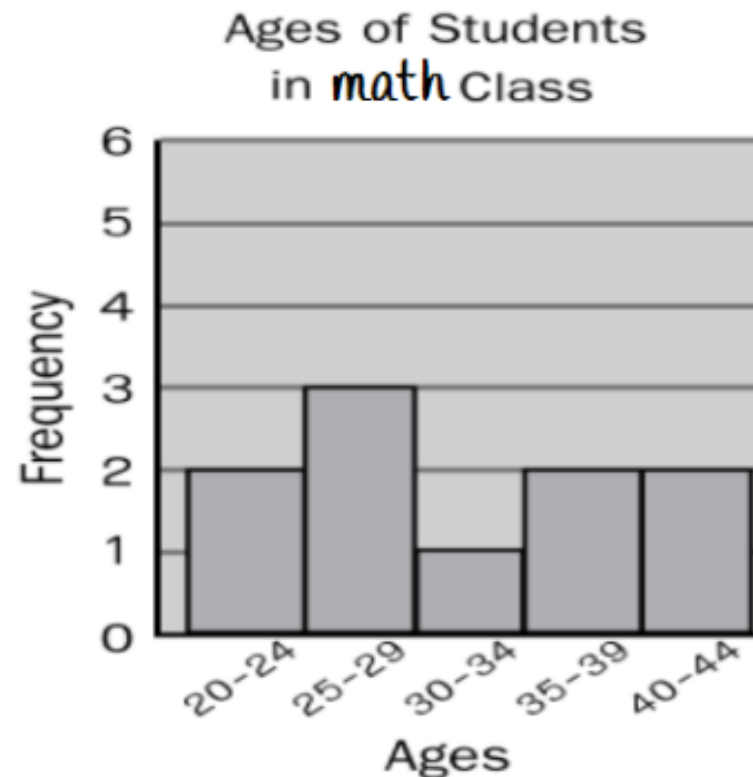
Part 1 out of 2

Complete the frequency table.

Part 2 out of 2

Select the histogram that represents the data.

Age Interval	Frequency
20-24	2
25-29	3
30-34	1
35-39	2
40-44	2

Ages of Students in math Class

*Look at each interval and determine the number of students in each.

*Determine which histogram uses the frequency data in the table by checking that each frequency corresponds to the right interval.

2 The high temperature, in °F, for the past 4 days was 45, 38, 46, and 35. Carlos knows that the mean high temperature for the past 5 days was 42°F. Enter and solve an equation to find the high temperature on the first day. Use x to represent the high temperature for the first day.

The equation: $\dfrac{x + 45 + 38 + 46 + 35}{5} = 42$

$$\dfrac{x + 164}{5} = 42 \qquad \cancel{5}\dfrac{x + 164}{\cancel{5}} = 42 \times 5 \qquad \begin{array}{r} x + 164 = 210 \\ -164 \ -164 \\ \hline x = 46 \end{array}$$

The high temperature on the first day was 46 °F.

3 Enter an equation in slope–intercept form to represent a line that includes the points (3, 4) and (5, 2). Complete the explanation on how to find the equation.

First, find the [slope ▼] of the line by using the formula, $m = \dfrac{y_2 - y_1}{x_2 - x_1}$. Then, find the y-intercept by substituting one point and the slope into the general form of the slope-intercept equation and solving for [b ▼]. The equation is $y =$ [☺] [   ].

Find the Slope(m)

$$m = \frac{y_2 - y_1}{x_2 - x_1}.$$

$x_1 \ y_1 \qquad x_2 \ y_2$
(3, −4) and (5, 2).

$$m = \frac{2+4}{5-3} = \frac{6}{2} = 3$$

Write the Equation:

$$y - y_1 = m(x - x_1) \text{ given } m, (x_1, y_1)$$

$3, \ (5, 2)$

$$y - 2 = 3(x - 5)$$

$$y - 2 = 3x - 15$$
$$+2 \qquad\qquad +2$$
_____
$$☺ \ y = 3x - 13$$

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4 Use these data to find the measures of center.

29, 22, 17, 33, 15, 24, 33, 7

What is the mean?

Find the sum of all the entries and divide it by the number of entries.

$$\text{mean} = \frac{7 + 15 + 17 + 22 + 24 + 29 + 33 + 33}{8}$$

$$= \frac{180}{8} \quad \text{Divide.}$$

$$= 22.5$$

The mean is 22.5.

5 Find the mean and median of the data set.

Niles scored 40, 44, 42, 41, 43, and 60 on his 6 geography tests.

Divide the sum by the numbers of data values.

$$\frac{270}{6} = 45$$

The mean is **45**.

Find the median. Rewrite the values in increasing order.

40, 41, 42, 43, 44, 60

Find the mean of the middle two values.

$$\frac{42 + 43}{2} = 42.5$$

The median is **42.5**.

6 Find the median, range, and interquartile range for the given data set.

53, 62, 57, 55, 59, 57

Order the data values.

53, 55, 57, 57, 59, 62

The median is the middle value in a set when the values are arranged in numerical order.

$$\text{Median} = \frac{57 + 57}{2} = 57$$

The range is the difference between the greatest and the least data values.

$$\text{Range} = 62 - 53 = 9$$

The interquartile range (IQR) of a data set is the difference between the third and first quartiles. It represents the range of the middle half of the data.

$Q_1 = 55$ and $Q_3 = 59$

$$\begin{aligned} \text{IQR} &= Q_3 - Q_1 \\ &= 59 - 55 \\ &= 4 \end{aligned}$$

7 The table shows the number of free throws attempted during a basketball game. Select the appropriate dot plot and determine the type of distribution. Then complete the explanation on what the distribution means for the data set.

| Free Throws Shot	0	2	4	6	8
Team A	2	2	4	2	2
Team B	3	6	4	5	3

Team A:

To choose an appropriate scale, consider the minimum and maximum data values, 0 and 8. A number line from 0 to 8 will contain all the data values. A scale of 2 will be convenient for the data. Label tick marks by 2s.

Number of Free Throws

The data for team A show a [symmetric distribution ▼] . This means that
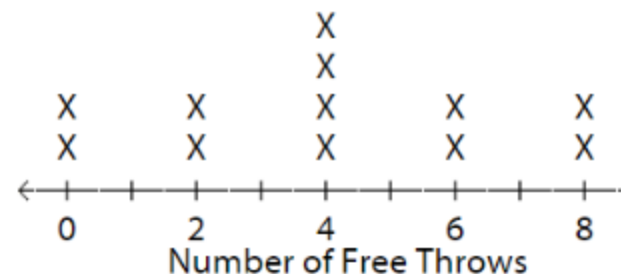
[the number of free throws hit is evenly distributed about] [▼] the mean.

Team B:

To choose an appropriate scale, consider the minimum and maximum data values, 0 and 8. A number line from 0 to 8 will contain all the data values. A scale of 2 will be convenient for the data. Label tick marks by 2s.

Number of Free Throws

The data for team B show a [distribution skewed to the right ▼] . This means
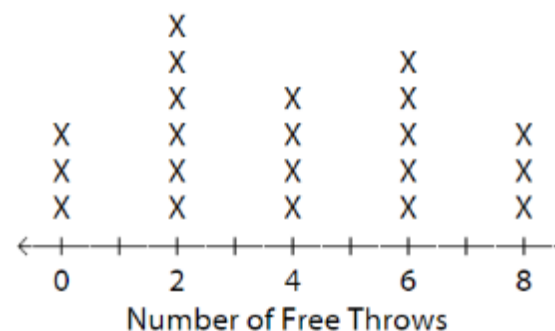
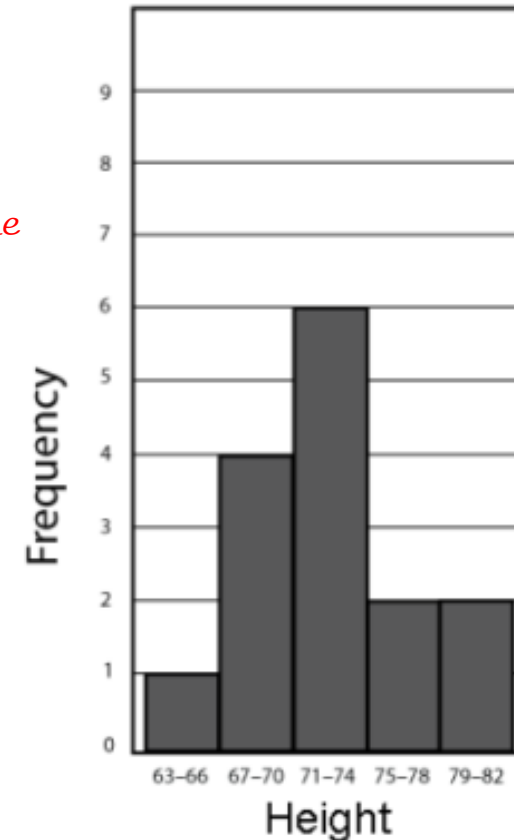[less than half of the team members shot a number of free throws that were greater than ▼] the mean.

8 Listed are the heights of players, in inches, on a basketball team. Complete the frequency table from the data.

79, 76, 73, 70, 63, 78, 73, 72, 67, 79, 73, 69, 74, 72, 69

Height Interval	Frequency
63–66	1
67–70	4
71–74	6
75–78	2
79–82	2

*Use the frequency table to create a histogram.

*Look at each interval and determine the number of students in each.

9 Select the correct set of box plots, one for each data set. Complete the statements comparing the medians and measures of variation for each distribution. The ages of the 10 richest people in the world for 2012 and 2013 are:
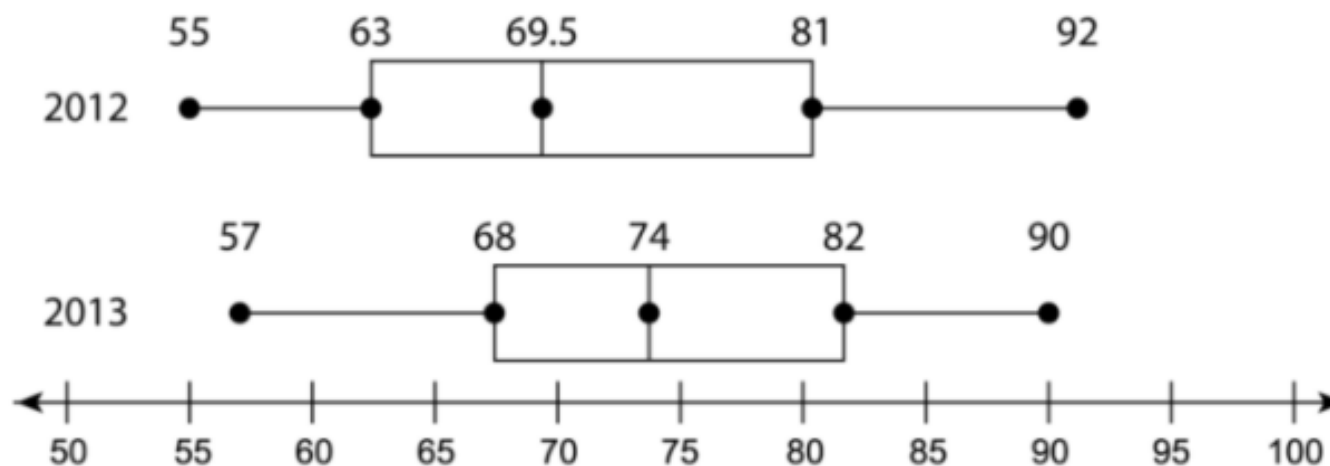
2012: 72, 56, 81, 63, 75, 67, 55, 64, 83, 92
2013: 72, 57, 76, 82, 68, 77, 72, 84, 90, 63

*For each set of data, identify the five values you need to make a box plot:
the minimum, first quartile, median, third quartile, and maximum.
*With the needed values for each data set, construct 2 box plots on the same number line. The number line for both plots can go from 20 billion to 80 billion.

The median for 2013 is much ⟨greater ▼⟩ than the median for 2012. Both the range and interquartile range for 2013 are ⟨less ▼⟩ than those of 2012, so the ages were ⟨more ▼⟩ varied in 2012.

10 Ten customers at Fielden Grocery were surveyed about how long they waited in line to check out. Their wait times, in minutes, are shown. Drag and drop the correct numbers into the boxes to complete the statements.

15	14	9	7	5
6	5	3	3	3

What is the mean of the data set?

$$\text{Mean} = \frac{15 + 14 + 9 + 7 + 5 + 6 + 5 + 3 + 3 + 3}{10} = \frac{70}{10} = 7$$

How many data points are below the mean, and how many are above the mean?

 6 data points are below, and 3 are above.

Does the data appear to be normally distributed? Complete the explanation.

The data set has 3 values greater than the mean but 6 values less than the mean, so the distribution is not symmetric ▼ . So, it does not appear ▼ to be normally distributed.