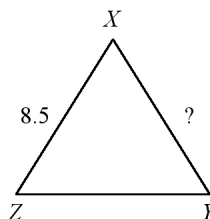
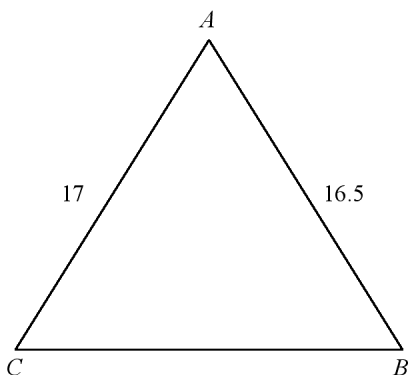


Math 7 Mastery Test #7 Review

1. Tell whether the data sets show a direct variation.

Bookshelf Length (in)	Number of Books
11	22
14	28
16	32
19	38
21	42

2. $\triangle ABC \sim \triangle XYZ$. Find XY .



3. Divide. Express your answer in simplest form.

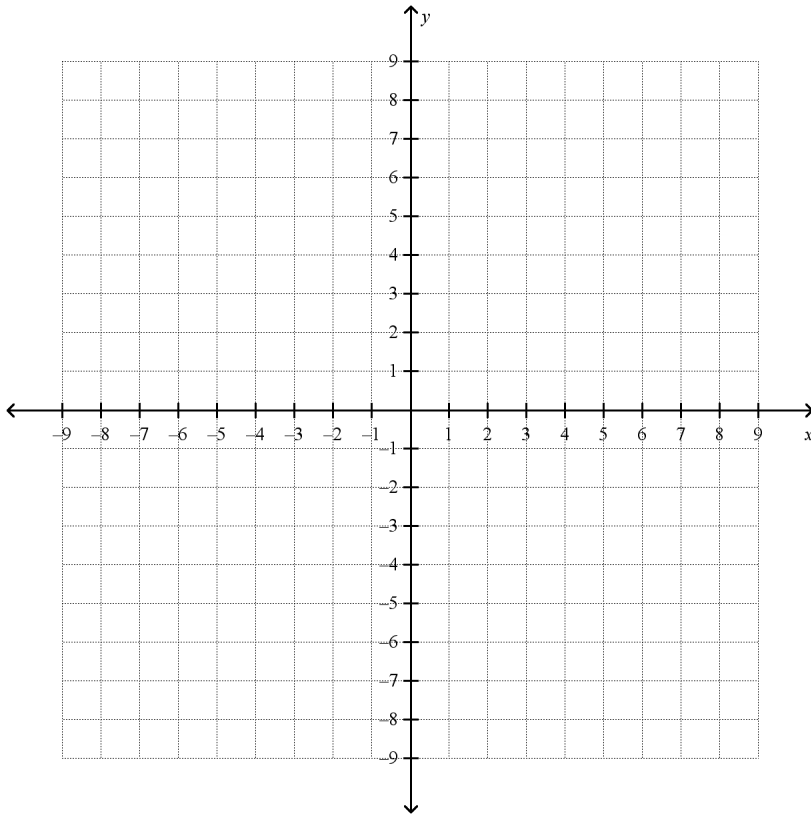
$$\frac{1}{11} \div \frac{6}{7}$$

4. Write $\frac{1}{8}$ as a percent.
5. ABC Shoes and Lo-Price Shoes both sell QuickRunner shoes. ABC Shoes sells the shoes for \$40.50, and Lo-Price Shoes sells them for \$28.80. Today, ABC Shoes decides to offer a 15% discount. Which store offers the better deal?
6. A jar is filled with buttons of various colors. If the jar has a total of 575 buttons and 32% of the buttons are red, how many red buttons are in the jar?

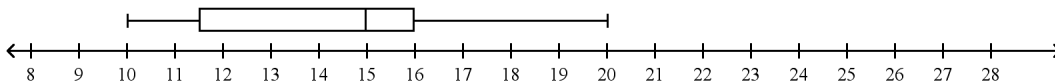
Name: _____

ID: A

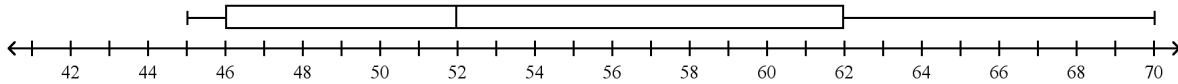
- An employee earned \$54,350.00 in a year and had \$5,815.45 withheld for federal income tax. What federal income tax percent was withheld? If necessary, round your answer to the nearest hundredth of a percent.
- A bank loans a customer \$93,000 for a period of 4 years. The simple interest rate of the loan is 6.8%. What is the total amount that the customer will need to pay the bank over the 4 years?
- Use the slope of $-\frac{2}{3}$ and the point $(-6, 7)$ to graph the line.



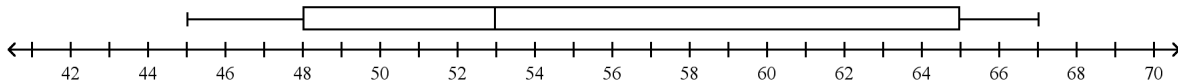
- Find the mean of the data set 14, 27, 84, 90, 27, 4. Show your work.
- Using the following data, state the errors in the box-and-whisker plot.
17, 13, 10, 15, 16, 12, 13, 20, 18



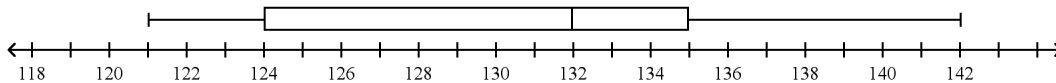
12. A pretzel maker was interested in knowing the number of pretzels in each bag it sold. The results of their research are shown in the box-and-whisker plot. What is the range in the number of pretzels in the bags?



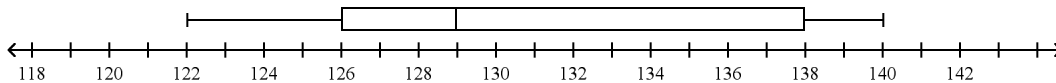
13. A pretzel maker was interested in knowing the number of pretzels in each bag it sold. The results of their research are shown in the box-and-whisker plot. What is the third quartile?



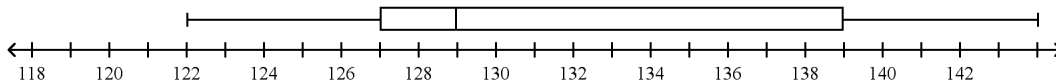
14. At a race track, the average speed of the race cars is measured every lap. The box-and-whisker plot represents the average speed of a certain car for several laps. What is the lower extreme?



15. At a race track, the average speed of the race cars is measured every lap. The box-and-whisker plot represents the average speed of a certain car for several laps. What is the upper extreme?



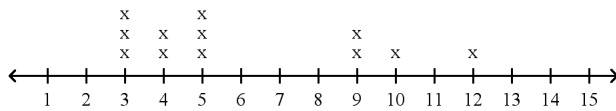
16. At a race track, the average speed of the race cars is measured every lap. The box-and-whisker plot represents the average speed of a certain car for several laps. What is the median?



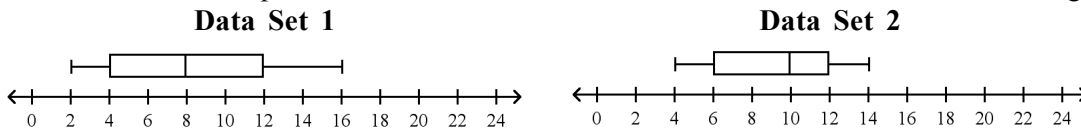
17. Ta-Pei works in a music store and earns 10.5% commission on each sale. If Ta-Pei sells a guitar and earns \$140.50, what is the price of the guitar? Round your answer to the nearest cent.

18. Find the mean, median, mode, and range of the data set 8, 3, 17, 16, 5, 9, 3. If necessary, round your answers to the nearest tenth.

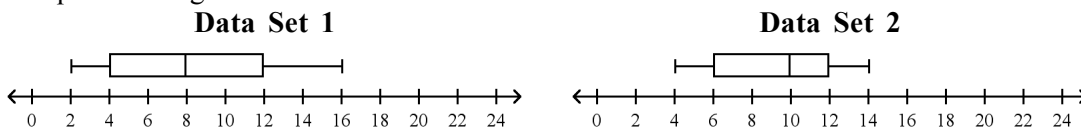
19. The line plot shows the number of books 12 students read in Ms. Zuber’s book club during the summer. Which measure of central tendency best describes the data? Justify your answer.



20. Identify the outlier in the data set 18, 1, 5, 14, 6, 136, 4. Then, find the mean and median with and without the outlier. If necessary, round your answers to the nearest tenth.
21. At a health club, an employee tracks the number of laps around the track that each member jogs. The results for five members are 14, 10, 5, 2, 13. Use the data to make a box-and-whisker plot.
22. The box-and-whisker plots show the distribution of two data sets. Which data set has a greater median?



23. The box-and-whisker plots show the distribution of two data sets. Which data set has a greater interquartile range?



Numeric Response

1. Find the average magnitude of the earthquakes shown that did not occur in Alaska. If necessary, round your answer to the nearest thousandth.

Year	Location	Magnitude
1812	Missouri	7.9
1872	California	7.8
1906	California	7.7
1957	Alaska	8.8
1964	Alaska	9.2
1965	Alaska	8.7
1983	Idaho	7.3
1986	Alaska	8.0

Math 7 Mastery Test #7 Review Answer Section

SHORT ANSWER

1. ANS:

yes

If the number of books divided by the length of the shelf is always the same, then this is a direct variation.

TOP: 5-4 Direct Variation

2. ANS:

$$s = 8.25$$

$$\frac{AB}{XY} = \frac{AC}{XZ}$$

Write a proportion using the corresponding sides.

$$\frac{16.5}{s} = \frac{17}{8.5}$$

Substitute the lengths of the sides.

$$16.5(8.5) = s(17)$$

Find the cross products.

$$140.25 = 17s$$

Multiply.

$$\frac{140.25}{17} = \frac{17s}{17}$$

Divide to isolate the variable.

$$8.25 = s$$

TOP: 4-5 Using Similar Figures

3. ANS:

$$\frac{7}{66}$$

Multiply $\frac{1}{11}$ by the reciprocal of $\frac{6}{7}$. If necessary, simplify.

$$\frac{1}{11} \div \frac{6}{7} = \frac{1}{11} \cdot \frac{7}{6} = \frac{7}{66}$$

TOP: 3-7 Dividing Fractions and Mixed Numbers

4. ANS:

12.5%

Write the fraction as a decimal by dividing the numerator by the denominator. Then, write the decimal as a percent.

TOP: 6-1 Fractions, Decimals, and Percents

5. ANS:

Lo-Price Shoes

First, find the discount on the shoes at ABC Shoes. Find a fraction that is close to the discount percent, and find a compatible number that is close to the cost of the shoes. Multiply the fraction and the compatible number.

Compare the discounted cost of the shoes at ABC Shoes and the cost of the shoes at Lo-Price Shoes.

TOP: 6-2 Estimating with Percents

6. ANS:

184 red buttons

First, write 32% as a decimal.

$$32\% = 0.32$$

Then, multiply 575 and 0.32.

$$575 \cdot 0.32 = 184$$

There are 184 red buttons are in the jar.

TOP: 6-4 Percent of Change

7. ANS:

10.7%

$$\frac{5,815.45}{54,350.00} = \frac{x}{100}$$

Set up a proportion.

$$54,350.00x = 5,815.45(100)$$
 Find the cross products.

$$\frac{54,350.00x}{54,350.00} = \frac{5,815.45(100)}{54,350.00}$$
 Since x is multiplied by ??, divide both sides by ?? to undo the multiplication.

$$x = 10.7$$

TOP: 6-5 Applications of Percents

8. ANS:

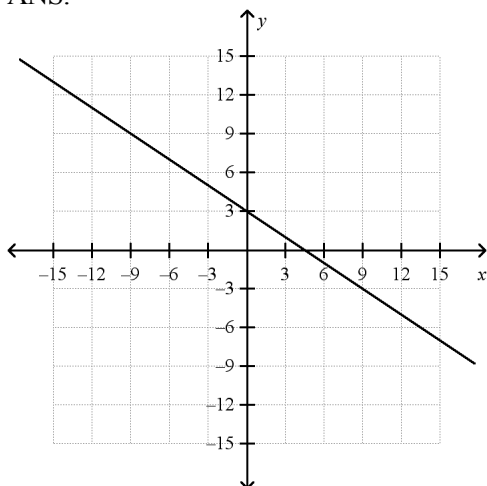
\$118,296

First, find the interest the customer will pay. Use the formula $I = P \cdot r \cdot t$.

Then, find the total amount to be repaid by adding the principal to the interest.

TOP: 6-6 Simple Interest

9. ANS:



To graph the line, first plot the given point. Then, using the rise (moving up if positive and down if negative) and the run (moving right if positive and left if negative) of the slope to find additional points. Finally, connect the points with a line.

TOP: 5-3 Slope and Rates of Change

10. ANS:

41

Add all of the numbers in the data set: $14 + 27 + 84 + 90 + 27 + 4 = 246$.

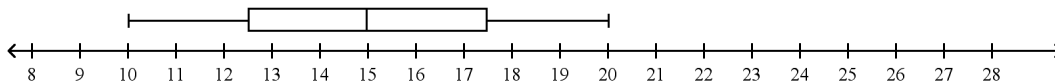
Divide the total by the number of items in the data set: $\frac{246}{6} = 41$.

Scoring Rubric:	
4	The solution is correct, and all of the work is shown as above. <i>or</i> A different logical method is used to find the correct solution.
3	The solution is correct, but not all of the work is shown.
2	The solution is incorrect, but the work shows understanding of the concept.
1	The solution is incorrect, and the work shows no understanding of the concept.

TOP: 7-1 Mean, Median, Mode, and Range

11. ANS:

The lower quartile should be 12.5, and the upper quartile should be 17.5.



Scoring Rubric:	
4	The solution is correct, and all of the work is shown as above. <i>or</i> A different logical method is used to find the correct solution.
3	The solution is correct, but not all of the work is shown.
2	The solution is incorrect, but the work shows understanding of the concept.
1	The solution is incorrect, and the work shows no understanding of the concept.

TOP: 7-2 Box-and-Whisker Plots

12. ANS:

25

$$70 - 45 = 25$$

TOP: 7-2 Box-and-Whisker Plots

13. ANS:

65

TOP: 7-2 Box-and-Whisker Plots

14. ANS:

121

TOP: 7-2 Box-and-Whisker Plots

15. ANS:

140

TOP: 7-2 Box-and-Whisker Plots

16. ANS:

129

TOP: 7-2 Box-and-Whisker Plots

17. ANS:

\$1,338.10

Set up an equation and solve.

sale • percent = commission

TOP: 6-5 Applications of Percents

18. ANS:

Mean = 8.7

Median = 8

Mode = 3

Range = 14

The mean is the sum of the data values divided by the number of data items.

The median is the middle value of an odd number of data items arranged in order. For an even number of data items, the median is the mean of the two middle values.

The mode the value or values that occur most often.

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

TOP: 7-1 Mean, Median, Mode, and Range

19. ANS:

The modes are 3 and 5. The mode best describes the data set because it represents half of the people.

The modes are 3 and 5. The mode best describes the data set because it represents half of the people.

TOP: 7-1 Mean, Median, Mode, and Range

20. ANS:

outlier = 136

mean with outlier = 26.3

median with outlier = 6

mean without outlier = 8

median without outlier = 5.5

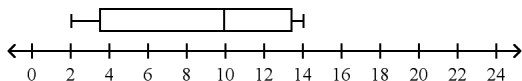
The outlier is the extreme value in the data set.

The mean is the sum of the data values divided by the number of data items.

The median is the middle value of an odd number of data items arranged in order. For an even number of data items, the median is the mean of the two middle values.

TOP: 7-1 Mean, Median, Mode, and Range

21. ANS:



Step 1 Order the data from least to greatest. Then, find the least and greatest values, the median, and the lower and upper quartiles.

Step 2 Draw a number line. Above the number line, plot a point for each value in Step 1.

Step 3 Draw a box from the lower to the upper quartile. Inside the box, draw a vertical line through the median. Then, draw the “whiskers” from the box to the least and greatest values.

TOP: 7-2 Box-and-Whisker Plots

22. ANS:

Data Set 2

In Data Set 1, the median is 8. In Data Set 2, the median is 10.

So, Data Set 2 has a greater median.

TOP: 7-2 Box-and-Whisker Plots

23. ANS:
Data Set 1
The length of the box indicates the interquartile range.
Data Set 1 has a longer box, so it has a greater interquartile range.

TOP: 7-2 Box-and-Whisker Plots

NUMERIC RESPONSE

1. ANS: 7.675

TOP: 7-1 Mean, Median, Mode, and Range