Name _____ Date _____ Period _____

**LESSON 2-1 · HOMEWORK PACKET · SHEET 1 OF 2**

# Statistical Questions

Maryland Standard 6.SP.A.1 · Learning target – I can tell whether a question is statistical by deciding if the answers will vary.

**REMEMBER**

- A **statistical question** expects answers that **vary**. You collect **data** to answer it.
- A **non-statistical question** has one fixed answer, like a fact you can look up.
- A number answer alone does not make a question statistical. Ask: "Will the answers be different?"

**WORKED EXAMPLE**

Is "How many minutes does each student in Room 12 ride the bus?" statistical?

**Step 1** Who answers? Every student in Room 12.

**Step 2** Will the answers differ? Yes: 5 min, 12 min, 25 min …

**Step 3** The answers vary, so you need data.

**Answer** **Statistical**

## PRACTICE

*show your work · label units*

**1.** Write **S** if the question is statistical or **N** if it is non-statistical.

| Question | S or N |
|---|---|
| **How many feet are in one yard?** | |
| **How many hours did each sixth grader sleep last night?** | |
| **What is the price of a bus ticket in Baltimore today?** | |
| **How many glasses of water does each person in my family drink a day?** | |

**2.** **Name Lengths.** Ms. Adeyemi asks each student, "How many letters are in your first name?" Five students answer 5, 4, 7, 5, and 6. Is her question statistical? Use the answers to explain.

☐ Statistical ☐ Not statistical

**Because** _____

**3.** **Survey Plan.** Is "How far does each player live from the field?" statistical?

☐ Statistical ☐ Not statistical

**4.** **Rewrite It.** Carlos asks, "How tall is the oak tree in front of our school?" Explain why this is not statistical. Then rewrite it as a statistical question.

_____

_____

**5.** **Your Turn.** Write a statistical question you could ask the people in your family. Then list three answers you might get.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask a family member one statistical question and one non-statistical question. Can they tell which is which?

Name _____ Date _____ Period _____

**LESSON 2-1 · HOMEWORK PACKET · SHEET 2 OF 2**

# Dot Plots and Shape

Maryland Standard 6.SP.B.4 · Learning target – I can build a dot plot and describe the shape of the data it shows.

**REMEMBER**

- A **dot plot** shows one dot per data value.
- **Peak**: tallest stack. **Gap**: no dots. **Outlier**: far away.
- **Symmetric**: the sides match. **Skewed right/left**: the tail goes that way.

**WORKED EXAMPLE**

Pets owned: 0, 0, 1, 1, 1, 1, 2, 2, 3, 5. Name the shape.

**Step 1** Stacks: 2 dots at 0, 4 at 1, 2 at 2, 1 at 3, 1 at 5.

**Step 2** Peak at 1. The tail stretches right to 5.

**Answer** **Skewed right**

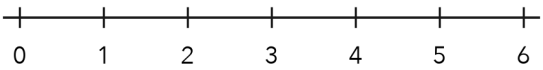
## PRACTICE

*show your work · label units*

**1.** **Books Read.** Books read in May by 12 students: 2, 3, 1, 3, 4, 2, 3, 5, 3, 2, 4, 4. Make a dot plot.

**a.** Peak: _____

**b.** Shape: _____




**Books Read in May**

**2.** **Arcade Tickets.** Tickets won by 9 friends: 5, 3, 4, 5, 2, 5, 4, 6, 5. Picture the dot plot.

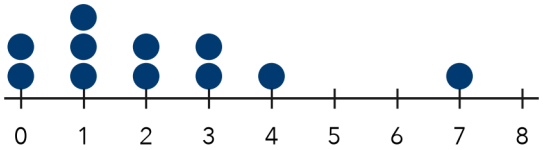
**a.** Dots at 5: ____ **b.** Peak: ____ **c.** Shape: _____

**3.** **Soccer Goals.** The dot plot shows the goals a team scored in each game.

**a.** Games played: _____

**b.** Most common: _____

**c.** Where is the gap? _____




**Goals Scored**

**4.** **Find the Error.** Leah says the Soccer Goals plot is skewed left. Explain her error.

_____

_____

**5.** **Quiz Scores.** 1 dot at 5, 1 at 6, 2 at 7, 4 at 8, 5 at 9, and 3 at 10. Name the shape.

☐ Symmetric ☐ Skewed left ☐ Skewed right

## TEST PRACTICE

*choose the best answer*

**6.** Stacks of 1, 3, 5, 3, and 1 dots sit above 2, 3, 4, 5, and 6. Which word describes the shape?

**A** Symmetric **B** Skewed left **C** Skewed right **D** Has a gap

**7.** A dot plot has 4 dots above 10, 6 above 11, 2 above 12, and 3 above 13. How many values?

**A** 4 **B** 6 **C** 13 **D** 15

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Count the letters in each family member's first name. Make a dot plot and name its shape.

Name _____ Date _____ Period _____

**LESSON 2-2 · HOMEWORK PACKET · SHEET 1 OF 2**

# Building a Histogram

Maryland Standard 6.SP.B.4 · Learning target – I can group data into equal intervals and build a histogram from a frequency table.

**REMEMBER**

- A **histogram** groups data into **equal intervals**, like 0–9, 10–19, 20–29.
- The **frequency** is how many values fall in an interval. It sets the bar height.
- Intervals do not overlap, and the bars **touch**.

**WORKED EXAMPLE**

Minutes of practice: 4, 15, 22, 9, 18, 27, 13, 16, 21, 11. Make a frequency table.

**Step 1** 0–9: 4, 9, so the frequency is 2.
**Step 2** 10–19: 15, 18, 13, 16, 11, so it is 5.
**Step 3** 20–29: 22, 27, 21, so it is 3.
**Answer** **2, 5, 3**

## PRACTICE

*show your work · label units*

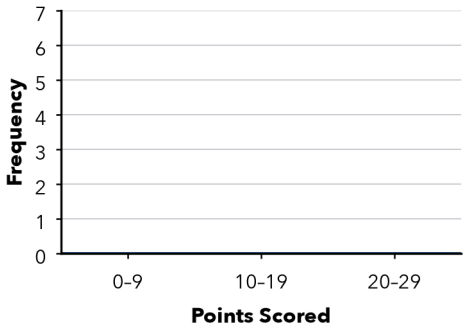
**1.** **Points Scored.** A player scored these points in 12 games: 8, 14, 21, 5, 17, 12, 25, 19, 11, 23, 16, 9. Complete the frequency table.

| Points | Tally | Frequency |
|---|---|---|
| **0–9** | | |
| **10–19** | | |
| **20–29** | | |

**2.** Draw the histogram for Problem 1. Bars should touch.

**a.** Which interval has the tallest bar? _____

**b.** Games with 10 or more points: _____




**3.** **Picnic Ages.** 34, 22, 41, 38, 27, 45, 31, 36, 29, 48 years. Find each frequency.

**a.** 20–29: ____ **b.** 30–39: ____ **c.** 40–49: ____

**4.** **Missing Bar.** A histogram shows the long-jump distances of 24 students. Three bars have heights 5, 9, and 3. There is one more bar. How tall is it?

**Answer** _____ students

**5.** **Find the Error.** Marcus used the intervals 0–9, 10–14, and 15–29. Explain his mistake and fix it.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask family members how many minutes they read today. Group the answers in intervals of 10.

Name _____ Date _____ Period _____

**LESSON 2-2 · HOMEWORK PACKET · SHEET 2 OF 2**

# Describing Histogram Shape

Maryland Standard 6.SP.B.4 · Learning target – I can describe the shape of a histogram using its peak, spread, and balance.

**REMEMBER**

- **Peak**: the tallest bar. **Symmetric**: sides match.
- **Skewed right**: the tail stretches right. **Skewed left**: the tail stretches left.
- A histogram shows counts, not exact values.

**WORKED EXAMPLE**

Bars of height 2, 7, 4, 2, 1 over 0–9, 10–19, 20–29, 30–39, 40–49. Shape?

**Step 1** The peak is 10–19, near the left.

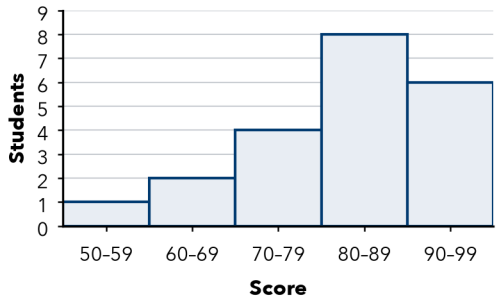
**Step 2** The bars shrink to the right: a tail on the right.

**Answer** **Skewed right**

## PRACTICE

*show your work · label units*

**1.** **Test Scores.** The histogram shows the scores on a class test.




**a.** Number of students: _____

**b.** Peak interval: _____

**c.** Shape: _____

**d.** Scores of 80 or more: _____

**2.** Bar heights are listed from left to right. Name each shape.

**a.** 1, 4, 8, 4, 1 _____ **b.** 9, 6, 3, 2, 1 _____ **c.** 1, 2, 3, 6, 10 _____

**d.** 3, 5, 9, 5, 3 _____ **e.** 12, 8, 5, 3, 2 _____ **f.** 2, 3, 5, 8, 12 _____

**3.** **Race Times.** Bars of 3, 8, 11, 6, 2 show 30 runners' times: 20–24, 25–29, 30–34, 35–39, 40–44 min.

**a.** How many runners finished in less than 30 minutes? _____

**b.** How many finished in 35 minutes or more? _____

**4.** **Stretch.** Write 5 bar heights, from left to right, for a histogram of **20** values that is **skewed left**.

**Bar heights** _____

**5.** **Explain.** Ramon says the Test Scores histogram shows a score of 85. Is he right? Explain.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Bar heights are listed from left to right. Which histogram is skewed right?

**A** 2, 5, 9, 5, 2 **B** 10, 7, 4, 2, 1 **C** 1, 2, 4, 7, 10 **D** 5, 5, 5, 5, 5

**7.** Bars of height 4, 7, and 5 sit over 0–9, 10–19, and 20–29. How many values are 10 or more?

**A** 7 **B** 11 **C** 12 **D** 16

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

**LESSON 2-3 · HOMEWORK PACKET · SHEET 1 OF 2**

# Finding the Median

Maryland Standard 6.SP.B.5c · Learning target – I can find the median of a data set by ordering the values and taking the middle one.

**REMEMBER**

- The **median** is the middle value of a data set.
- First **order** the values from least to greatest.
- With an odd number of values, one value sits in the middle.

**WORKED EXAMPLE**

Find the median of 14, 9, 21, 6, 17.

**Step 1** Order: 6, 9, 14, 17, 21

**Step 2** Cross off one from each end until one is left: 14.

**Answer** **Median = 14**

## PRACTICE

*show your work · label units*

**1.** Find the median of each data set.

**a.** 8, 3, 6 _____

**b.** 12, 18, 10, 15, 11 _____

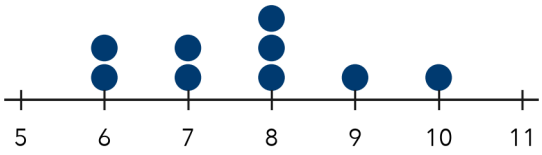
**c.** 25, 40, 35, 30, 20 _____

**d.** 7, 2, 9, 4, 5, 8, 1 _____

**2.** **Sleep.** The dot plot shows how many hours some students slept last night.

**a.** Number of students: _____

**b.** Median: _____ hours




**Hours of Sleep**

**3.** **Bike Rides.** Kiara rode her bike 7 times. She rode 4, 11, 7, 15, 9, 6, and 12 miles. Find the median distance.

*Show your work.*

**Answer** _____ miles

**4.** **Missing Score.** Four of five scores are 82, 90, 75, 88. The median is 85. Find the fifth.

**Answer** _____ points

**5.** **Build a Set.** Write a set of 5 different whole numbers that has a median of 12.

**My set** _____

**6.** **Reason.** The data set 4, 6, 9, 11, 30 has a median of 9. If 30 changes to 100, does the median change? Explain.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask 5 people at home how many letters are in their first name. Find the median.

Name _____ Date _____ Period _____

**LESSON 2-3 · HOMEWORK PACKET · SHEET 2 OF 2**

# Median of an Even Data Set

Maryland Standard 6.SP.B.5c · Learning target – I can find the median of a data set with an even number of values by averaging the two middle values.

**REMEMBER**

- With an **even** number of values, there are **two middle values**.
- The median is halfway between them: **add the two, then divide by 2**.
- The median does not have to be a data value.

**WORKED EXAMPLE**

Find the median of 12, 7, 15, 10, 20, 9.

**Step 1** Order: 7, 9, 10, 12, 15, 20

**Step 2** Two middle values: 10 and 12

**Step 3** (10 + 12) ÷ 2 = 22 ÷ 2 = 11

**Answer** **Median = 11**

## PRACTICE

*show your work · label units*

**1.** Find the median of each data set.

**a.** 3, 9, 5, 7 _____

**b.** 20, 14, 18, 12 _____

**c.** 11, 6, 9, 4, 13, 8 _____

**d.** 30, 45, 35, 50, 40, 25 _____

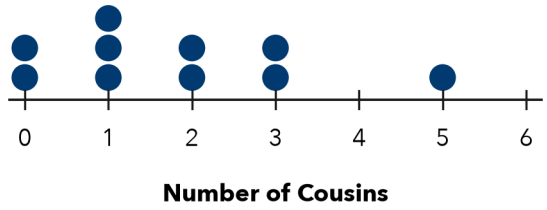
**e.** 16, 9, 21, 12, 30, 14, 25, 10 _____

**f.** 5, 11, 8, 5 _____

**2.** **Cousins.** The dot plot shows how many cousins 10 students have.

**a.** Two middle values: _____

**b.** Median: _____




**3.** **Puppies.** Six puppies weigh 8, 12, 5, 15, 10, and 7 pounds. Find the median weight.

**Answer** _____ pounds

**4.** **Work Backward.** Four values in order are 6, 10, ___, 20. The median is 12. Find the missing value.

**Missing value** _____

**5.** **Find the Error.** Ana says the median of 8, 2, 10, 6 is (2 + 10) ÷ 2 = 6. Explain her error.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** What is the median of 15, 9, 12, 20?

**A** 13.5 **B** 12 **C** 14 **D** 10.5

**7.** Six values have a median of 30. Which could be the two middle values?

**A** 28 and 32 **B** 30 and 34 **C** 25 and 30 **D** 29 and 30

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask 4 or 6 people at home their shoe size. Find the median.

Name _____ Date _____ Period _____

**LESSON 2-4 · HOMEWORK PACKET · SHEET 1 OF 2**

# Building a Box Plot

Maryland Standard 6.SP.B.4 · Learning target – I can find the five-number summary of a data set and use it to build a box plot.

**REMEMBER**

- **Five-number summary**: minimum, Q1, median, Q3, maximum.
- **Q1** is the median of the lower half; **Q3** of the upper half. Odd count: leave the median out.
- The **box** goes from Q1 to Q3, with a line at the median. **Whiskers** reach the min and max.

**WORKED EXAMPLE**

Find the five-number summary of 4, 6, 9, 10, 13, 15, 18.

**Step 1** Min = 4, max = 18, median = 10

**Step 2** Lower half 4, 6, 9, so Q1 = 6

**Step 3** Upper half 13, 15, 18, so Q3 = 15

**Answer** **4, 6, 10, 15, 18**

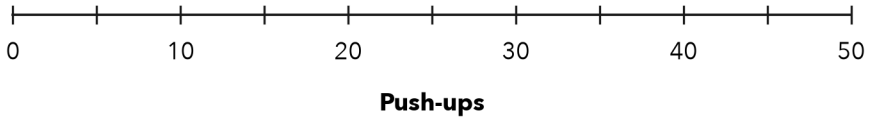
## PRACTICE

*show your work · label units*

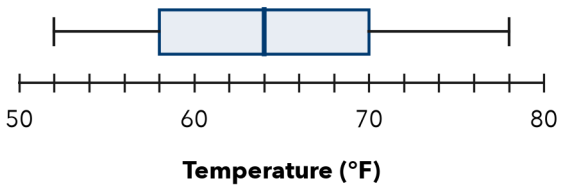
**1.** **Push-ups.** Nine students did 22, 40, 10, 34, 18, 46, 25, 14, and 30 push-ups. Find the five-number summary.

| Min | Q1 | Median | Q3 | Max |
|---|---|---|---|---|
| | | | | |

**2.** Draw a box plot of the push-up data from Problem 1.




**3.** **Temperatures.** The box plot shows daily high temperatures (°F) for a month.




**a.** Median: _____ °F

**b.** Q1 and Q3: _____

**c.** Fraction of days from 58 to 70°F: _____

**4.** **Homework Minutes.** 26, 14, 39, 20, 11, 32, 18, 28. Find each value.

**a.** Q1: ____ **b.** Median: ____ **c.** Q3: ____

**5.** **Find the Error.** Grace says Q1 of 2, 5, 7, 8, 12, 14, 20 is 6. She used 2, 5, 7, 8 as the lower half. Explain her error and find Q1.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Explain to someone at home what the box in a box plot shows.

Name _____ Date _____ Period _____

**LESSON 2-4 · HOMEWORK PACKET · SHEET 2 OF 2**

# Comparing Box Plots

Maryland Standard 6.SP.B.4 · Learning target – I can compare two groups by reading the medians and box widths of their box plots.

**REMEMBER**

- Compare **centers**: use the medians.
- Compare **spread**: box width and range.
- A **narrower box** (Q3 − Q1) is more **consistent**.

**WORKED EXAMPLE**

A: median 18, box 14–22. B: median 24, box 20–26.

**Step 1** Center: 24 > 18, so B scored higher.

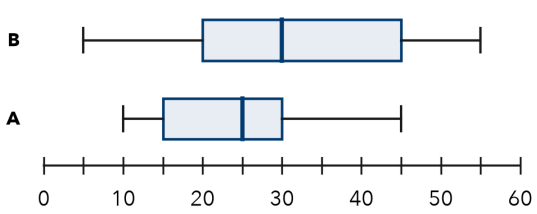
**Step 2** Box widths: A is 22 − 14 = 8; B is 26 − 20 = 6.

**Answer** **B is higher and more consistent**

## PRACTICE

*show your work · label units*

**1.** **Reading Time.** Minutes of reading per day for Class A and Class B.




**a.** Greater median: _____ by _____ min

**b.** Box widths: A _____ B _____

**c.** More consistent: _____

**2.** Find each measure of spread.

**a.** Q1 = 12, Q3 = 30. Box width: _____

**b.** Min = 5, max = 41. Range: _____

**3.** **Bowling.** Complete the table for two bowlers' scores.

| | Min | Q1 | Median | Q3 | Max | Box width | Range |
|---|---|---|---|---|---|---|---|
| **Maya** | 80 | 95 | 102 | 110 | 125 | | |
| **Leon** | 70 | 90 | 105 | 112 | 140 | | |

**Who is more consistent?** _____

**4.** **Plant Heights.** Both medians are 14 cm. Box S: 12–16 cm. Box T: 8–20 cm. Which varies more?

☐ Group S ☐ Group T

**5.** **Choose a Bus.** Both medians are 20 min. Boxes: A 18–22, B 14–26 min. Which is more reliable?

_____

## TEST PRACTICE

*choose the best answer*

**6.** X: Q1 = 22, Q3 = 34. Y: Q1 = 25, Q3 = 31. Which middle half is more consistent?

**A** X **B** Y **C** They are equal **D** Cannot tell

**7.** A box plot has the summary 8, 12, 15, 21, 30. How wide is the box?

**A** 9 **B** 22 **C** 15 **D** 3

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

**LESSON 2-5 · HOMEWORK PACKET · SHEET 1 OF 2**

# Range and IQR

Maryland Standard 6.SP.B.5c · Learning target – I can find the range and the interquartile range of a data set.

**REMEMBER**

- **Range** = maximum − minimum. It is the spread of all the data.
- **IQR** (interquartile range) = Q3 − Q1. It is the spread of the middle half.
- One extreme value changes the range a lot but the IQR very little.

**WORKED EXAMPLE**

Find the range and IQR of 3, 7, 8, 10, 12, 15, 20.

**Step 1** Range: 20 − 3 = 17

**Step 2** Median 10. Q1 = 7 (of 3, 7, 8). Q3 = 15 (of 12, 15, 20).

**Step 3** IQR: 15 − 7 = 8

**Answer** **Range 17, IQR 8**

## PRACTICE

*show your work · label units*

**1.** Find each measure.

**a.** Range of 14, 6, 21, 9: _____

**b.** Range of 52, 38, 47, 60: _____

**c.** IQR when Q1 = 18, Q3 = 31: _____

**d.** IQR when Q1 = 40, Q3 = 56: _____

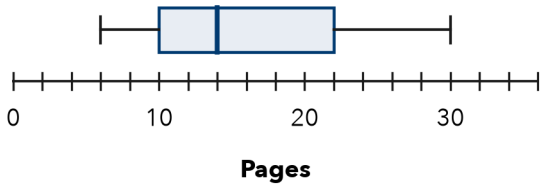
**e.** Range of 75, 90, 68, 83: _____

**f.** IQR when Q1 = 7, Q3 = 25: _____

**2.** **Pages Read.** The box plot shows pages read by students in one week.

**a.** Range: _____ pages

**b.** IQR: _____ pages




**3.** **Jump Rope.** Seven students jumped rope 35, 52, 41, 60, 28, 47, and 55 times. Find the range and the IQR.

**a.** Range: _____

**b.** IQR: _____

*Show your work.*

**4.** **Work Backward.** A data set has a minimum of 14 and a range of 29. Its Q1 is 20 and its IQR is 11.

**a.** Maximum: _____

**b.** Q3: _____

**5.** **Find the Error.** Mateo says the IQR is always half of the range. Use the Jump Rope data to explain why he is wrong.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask family members their ages. Find the range of the ages.

Name _____ Date _____ Period _____

**LESSON 2-5 · HOMEWORK PACKET · SHEET 2 OF 2**

# Comparing Variability

Maryland Standard 6.SP.B.5c · Learning target – I can compare the variability of two data sets using range and IQR.

**REMEMBER**

- More range or IQR = **more variability**.
- Less variability = more **consistent**. Compare range with range, IQR with IQR.
- With an extreme value, use the **IQR**.

**WORKED EXAMPLE**

Team P: IQR 6 points. Team Q: IQR 15 points. Which is more consistent?

**Step 1** 6 < 15, so Team P's middle half is closer.

**Answer** **Team P**

## PRACTICE

*show your work · label units*

**1.** Find each IQR.

**a.** Set P: Q1 = 30, Q3 = 42 _____

**b.** Set Q: Q1 = 33, Q3 = 39 _____

**2.** **Basketball.** Points per game: Player 1: 8, 10, 11, 12, 13, 14, 16. Player 2: 2, 6, 9, 12, 15, 18, 22.

| | Range | IQR |
|---|---|---|
| **Player 1** | | |
| **Player 2** | | |

**More consistent player** _____

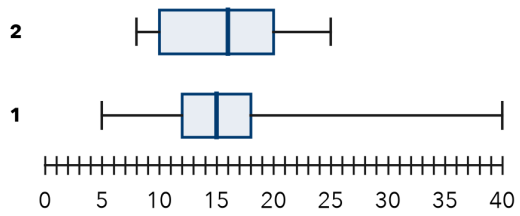
**3.** **Spelling Scores.** Group A scored 70, 72, 75, 78, 80. Group B scored 55, 65, 75, 85, 95.

Ranges: A ____ B ____ More consistent group: _____

**4.** **Bus Routes.** The box plots show ride times in minutes.

**a.** Ranges: 1 ____ 2 ____

**b.** IQRs: 1 ____ 2 ____




**5.** Jada says Route 2 is more consistent. Kwame says Route 1 is. Who is right? Why?

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Class A's scores have a range of 12. Class B's have a range of 30. Whose scores vary less?

**A** Class A **B** Class B **C** Both the same **D** Cannot tell

**7.** What is the IQR of 4, 6, 7, 9, 10, 12, 15?

**A** 6 **B** 11 **C** 4.5 **D** 9

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name_____ Date_____ Period_____

**LESSON 2-3 · HOMEWORK PACKET · SHEET 1 OF 2**

# Median and Outliers

Maryland Standard 6.SP.B.5d · Learning target – I can explain why the median is a better measure of center than the mean when a data set has an outlier.

**REMEMBER**

- An **outlier** is a value much greater or much less than the rest of the data.
- An outlier pulls the **mean** toward it. The **median** barely moves, so it is **resistant** to outliers.
- With an outlier, the median usually describes a **typical value** better. Still report the outlier; it is real data.

**WORKED EXAMPLE**

Six bike rides lasted 14, 18, 15, 16, 64, and 17 minutes. The mean is 24 minutes. Which measure better describes a typical ride?

**Step 1** Order: 14, 15, 16, 17, 18, 64. The outlier is 64.

**Step 2** Median: (16 + 17) ÷ 2 = 16.5. The mean, 24, is greater than 5 of the 6 rides.

**Answer** **The median, 16.5 minutes**

## PRACTICE

*show your work · label units*

**1.** Find the median of each data set. Circle the outlier in each set.

**a.** 9, 11, 10, 12, 13, 8, 48 _____

**b.** 3, 70, 72, 75, 78, 71, 74 _____

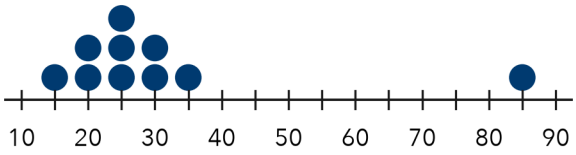
**c.** 25, 28, 30, 31, 33, 95 _____

**d.** 40, 41, 43, 44, 46, 47, 150 _____

**e.** 6, 7, 7, 8, 9, 10, 34 _____

**f.** 56, 52, 55, 54, 9, 53, 57, 58 _____

**2.** **Homework Minutes.** The dot plot shows minutes 10 students spent on homework one night. The mean is 31 minutes.




**Minutes on Homework**

**a.** Outlier: _____

**b.** Median: _____ min

**c.** Students below the mean: _____

**d.** Better center: _____

**3.** **Library Visitors.** Visitors on 7 days: 64, 58, 61, 66, 59, 63, and 4 (the library closed early for snow).

**a.** Median of all 7 days: _____

**b.** Median without the 4: _____

**4.** **Car Wash.** A club earned $10, $12, $13, $14, $15, $16, and $60 on 7 Saturdays.

**a.** Mean: $ ____

**b.** Median: $ ____

**c.** Better center: _____

**5.** **Find the Error.** Andre's data are 31, 33, 34, 36, 37, 39, and 210. He says, "The outlier 210 makes the median much bigger, so the median is not a good measure." Is he right? Find the median to support your answer.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask someone at home about a normal trip and their slowest trip. Which trip is an outlier?

Name_____ Date_____ Period_____

**LESSON 2-3 · HOMEWORK PACKET · SHEET 2 OF 2**

# Comparing Distributions

Maryland Standard 6.SP.B.5d · Learning target – I can compare two distributions using the median and the interquartile range together.

**REMEMBER**

- Compare **centers** with the medians. Compare **spreads** with the IQRs (IQR = Q3 − Q1).
- A smaller IQR means more **consistent** data. A full comparison names **both** measures for **both** groups, with numbers.

**WORKED EXAMPLE**

Team Red: median 14 points, IQR 6. Team Blue: median 18 points, IQR 15. Compare the teams.

**Step 1** Centers: 18 > 14, so Blue usually scores more.

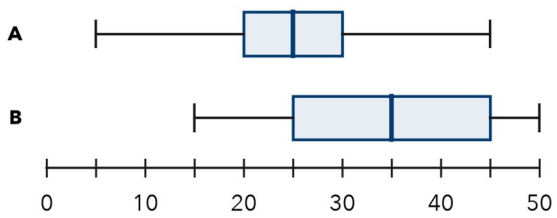
**Step 2** Spreads: 6 < 15, so Red is more consistent.

**Answer** **Blue scores more; Red is more consistent.**

## PRACTICE

*show your work · label units*

**1.** **Reading Minutes.** The box plots show minutes read per day by Class A and Class B.




**a.** Medians: A ___ B ___

**b.** IQRs: A ___ B ___

**c.** Usually reads more: _____

**d.** More consistent: _____

**2.** **Bus Routes.** Minutes late on 7 days. **Route 3:** 2, 3, 5, 6, 8, 9, 11. **Route 8:** 0, 1, 4, 6, 10, 14, 15.

**a.** Route 3: median ___ IQR ___ Route 8: median ___ IQR ___

**b.** Which route is more predictable? Why? _____

**3.** **Plant Heights (cm).** **Sun:** 10, 12, 13, 15, 16, 18, 19, 21. **Shade:** 6, 7, 8, 8, 9, 10, 10, 12.

**a.** Sun: median ___ cm IQR ___ cm

**b.** Shade: median ___ cm IQR ___ cm

**4.** **Delivery.** Shop K: median 28 min, IQR 8 min. Shop L: median 36 min, IQR 8 min. What is the same?

☐ the same center ☐ the same spread ☐ both center and spread

**5.** **Find the Error.** Set E: median 70, IQR 25. Set F: median 64, IQR 6. Jada says, "Set E is higher and more consistent." Explain her error.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Group 1: median 12 cm, IQR 3 cm. Group 2: median 12 cm, IQR 9 cm. Which is more consistent?

**A** Group 1 **B** Group 2 **C** Both the same **D** Cannot tell

**7.** What is the IQR of 3, 5, 6, 8, 10, 12, 13?

**A** 7 **B** 8 **C** 10 **D** 17

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Tell someone at home why a bus with a small IQR is easier to plan around.

Name _____ Date _____ Period _____

**LESSON 2-7 · HOMEWORK PACKET · SHEET 1 OF 2**

# Dividing a Decimal by a Whole Number

Maryland Standard 6.NS.B.3 · Learning target – I can divide a decimal by a whole number and place the decimal point correctly.

**REMEMBER**

- Divide as you do with whole numbers. Put the decimal point in the quotient **straight above** the point in the dividend.
- If an amount is left over, **annex a zero** (write 0 after the last digit) and keep dividing.
- **Check:** quotient × divisor = dividend. Estimate first to catch a misplaced point.

**WORKED EXAMPLE**

Four friends share 22.2 kg of potting soil equally. How much does each get?

**Step 1** Estimate: 22 ÷ 4 is about 5.5. Put the point straight above.

**Step 2** 22 ÷ 4 = 5 R2. Then 22 tenths ÷ 4 = 5 tenths R2.

**Step 3** Annex a zero: 20 hundredths ÷ 4 = 5 hundredths.

**Answer** **5.55 kg each (5.55 × 4 = 22.2)**

## PRACTICE

*show your work · label units*

**1.** Find each quotient.

**a.** 9.6 ÷ 3 = _____ **b.** 18.5 ÷ 5 = _____ **c.** 2.94 ÷ 7 = _____

**d.** 0.56 ÷ 8 = _____ **e.** 31.2 ÷ 6 = _____ **f.** 9.3 ÷ 6 = _____

**2.** **Bulk Rice.** A 12-pound bag of rice costs $16.80. What is the cost per pound?

*Show your work.*

**Answer** _____ per pound

**3.** **Relay Race.** 8 runners split a 10.2-kilometer relay equally. How far does each runner go?

*Show your work.*

**Answer** _____ km

**4.** **Better Buy.** Store A sells 4 cans of beans for $3.56. Store B sells 6 cans for $5.10.

**a.** A, per can: $ ____ **b.** B, per can: $ ____ **c.** Better buy: ____

**5.** **Find the Error.** Marcus wrote 4.35 ÷ 5 = 8.7. Use an estimate to explain his mistake. Then give the correct quotient.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** At the store, find a pack of several items. Divide the price by the number of items to find the cost of one.

Name _____ Date _____ Period _____

**LESSON 2-7 · HOMEWORK PACKET · SHEET 2 OF 2**

# Dividing by a Decimal

Maryland Standard 6.NS.B.3 · Learning target – I can divide by a decimal by making the divisor a whole number first.

**REMEMBER**

- Make the divisor whole: move **both** decimal points the **same** number of places right. The quotient does not change: 4.8 ÷ 0.6 = 48 ÷ 6.
- Annex zeros in the dividend if needed. Dividing by a number less than 1 gives a quotient **greater** than the dividend.

**WORKED EXAMPLE**

How many 0.15-liter cups can be filled from 4.5 liters of juice?

**Step 1** Make 0.15 whole: 0.15 × 100 = 15.
**Step 2** Do the same to 4.5: 4.5 × 100 = 450.
**Step 3** 450 ÷ 15 = 30. Check: 30 × 0.15 = 4.5
**Answer** **30 cups**

## PRACTICE

*show your work · label units*

**1.** Rewrite with a whole-number divisor. Then divide.

**a.** 4.8 ÷ 0.6 = _____ **b.** 2.75 ÷ 0.5 = _____ **c.** 0.96 ÷ 0.12 = _____

**d.** 9 ÷ 0.3 = _____ **e.** 1.68 ÷ 0.04 = _____ **f.** 13.2 ÷ 1.1 = _____

**2.** **Pillows.** Leon has 7.5 yards of fabric. Each pillow uses 1.25 yards. How many pillows can he make?

*Show your work.*

**Answer** _____ pillows

**3.** **Juice Glasses.** A pitcher holds 2.4 liters of juice. How many glasses can it fill?

**a.** 0.3-liter glasses: _____ **b.** 0.2-liter glasses: _____

**4.** **Walking Path.** One lap of a park path is 0.75 mile. How many laps make each distance?

**a.** 4.5 miles: ____ laps **b.** 6 miles: ____ laps

**5.** **Find the Error.** Keisha wrote 2.4 ÷ 0.08 = 24 ÷ 8 = 3. Explain her error. Find the correct quotient.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Which division has the same quotient as 6.72 ÷ 0.8?

**A** 672 ÷ 8 **B** 67.2 ÷ 8 **C** 6.72 ÷ 8 **D** 67.2 ÷ 80

**7.** How many 0.4-pound bags can be filled from 15.6 pounds of trail mix?

**A** 3.9 **B** 6.24 **C** 39 **D** 390

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Tell someone at home why 6 ÷ 0.5 is greater than 6.

Name _____ Date _____ Period _____

**LESSON 2-8 · HOMEWORK PACKET · SHEET 1 OF 2**

# Finding the Mean

Maryland Standard 6.SP.B.5c · Learning target – I can find the mean of a data set by sharing the total equally among the values.

**REMEMBER**

- The **mean** is a fair share: add all the values, then divide by **how many** values there are.
- **Mean = sum ÷ number of values.** Count every value, including repeats and zeros.
- The mean is between the least and greatest values. It does not have to be in the data set.

**WORKED EXAMPLE**

Kiara read 12, 9, 15, 8, and 11 pages on five nights. Find the mean.

**Step 1** Add: 12 + 9 + 15 + 8 + 11 = 55

**Step 2** Count: there are 5 values.

**Step 3** Divide: 55 ÷ 5 = 11. Check: 11 is between 8 and 15.

**Answer** **11 pages**

## PRACTICE

*show your work · label units*

**1.** Find the mean of each data set.

**a.** 6, 9, 12 _____ **b.** 15, 20, 25, 40 _____ **c.** 7, 0, 5, 8 _____

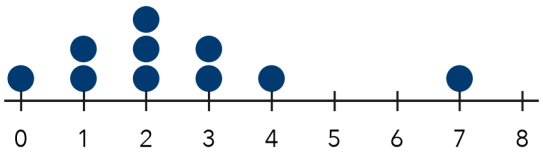
**d.** 3, 3, 9, 4, 6 _____ **e.** 2.5, 3.5, 4.5 _____ **f.** 18, 22, 14, 26, 30 _____

**2.** **Soccer Goals.** The dot plot shows the goals a team scored in each game this season.

**a.** Total goals: _____

**b.** Number of games: _____

**c.** Mean goals per game: _____




**Goals Scored**

**3.** **Rainfall.** Rain fell on five days: 0.4 in, 1.2 in, 0 in, 0.9 in, and 0.5 in. Find the mean daily rainfall.

*Show your work.*

**Answer** _____ in

**4.** **New Value.** The mean of 8, 10, and 12 is 10. A fourth value, 20, is added. What happens to the mean?

☐ It goes up. ☐ It goes down. ☐ It stays the same.

**New mean** _____

**5.** **Find the Error.** To find the mean of 8, 0, 6, and 10, Darnell added to get 24. Then he divided by 3 because "zero does not count." Explain his error and find the mean.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask 4 people at home how many glasses of water they drink in a day. Find the mean.

Name _____ Date _____ Period _____

**LESSON 2-8 · HOMEWORK PACKET · SHEET 2 OF 2**

# Reaching a Target Mean

Maryland Standard 6.SP.B.5c · Learning target – I can find the value a data set still needs in order to reach a target mean.

**REMEMBER**

- **Target total = target mean × number of values** (count the missing value too).
- **Missing value = target total − sum so far.** Check: the new total ÷ count should equal the target mean.

**WORKED EXAMPLE**

Jamal's quiz scores are 78, 85, and 90. What score on quiz 4 gives a mean of 85?

**Step 1** Target total: 85 × 4 = 340

**Step 2** Sum so far: 78 + 85 + 90 = 253

**Step 3** Missing: 340 − 253 = 87. Check: 340 ÷ 4 = 85

**Answer** **87 points**

## PRACTICE

*show your work · label units*

**1.** Complete the table.

| | Values | Target mean | Target total | Sum so far | Missing value |
|---|---|---|---|---|---|
| **A** | 3 | 12 | | 25 | |
| **B** | 4 | | 64 | 49 | |

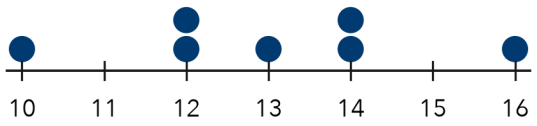
**2.** **Bowling.** Aaliyah bowled 112, 98, 105, and 121. What score in game 5 gives her a mean of 110?

**Answer** _____ points

**3.** **Car Wash.** A club raised $45, $60, $52, and $38 on four Saturdays. What must it raise on the fifth Saturday for a mean of $50?

**Answer** _____

**4.** **Push-Ups.** The dot plot shows how many push-ups Nia did on each of 7 days.




**a.** Mean for the 7 days: _____

**b.** Day 8 for a mean of 14: _____

**5.** **Find the Error.** Brianna scored 82, 86, and 78. For a mean of 85 on 4 tests, she wrote 85 × 3 − 246 = 9. Explain her error. What score does she need?

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Four numbers have a mean of 9. Three of them are 7, 10, and 8. What is the fourth number?

**A** 9 **B** 11 **C** 2 **D** 36

**7.** A player's points in 5 games have a mean of 14. What is her total number of points?

**A** 2.8 **B** 19 **C** 70 **D** 9

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

**LESSON 2-9 · HOMEWORK PACKET · SHEET 1 OF 2**

# Finding Mean Absolute Deviation (MAD)

Maryland Standard 6.SP.B.5c · Learning target – I can find the mean absolute deviation of a data set and explain what it measures.

**REMEMBER**

- The **MAD** (mean absolute deviation) is the average **distance** of the values from the mean. Distances are never negative.
- Find the **mean**. Find each value's **distance** from the mean. Then find the **mean of the distances**.

**WORKED EXAMPLE**

Ruth's quiz scores are 6, 8, 9, and 13. Find the MAD.

**Step 1** Mean: 36 ÷ 4 = 9

**Step 2** Distances from 9: 3, 1, 0, 4

**Step 3** Mean of distances: 8 ÷ 4 = 2

**Answer** **MAD = 2 points**

## PRACTICE

*show your work · label units*

**1.** The mean of 5, 7, 10, 12, and 16 is 10. Complete the table. Then find the MAD.

| **Value** | **5** | **7** | **10** | **12** | **16** |
|---|---|---|---|---|---|
| **Distance from 10** | | | | | |

**MAD** _____

**2.** The mean is given. Find the MAD.

**a.** 1, 3, 5, 7 (mean 4) _____

**b.** 20, 25, 35, 40 (mean 30) _____

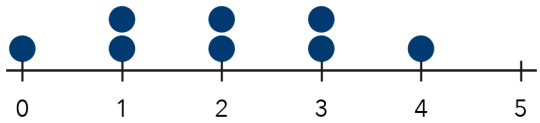
**c.** 6, 6, 6, 6, 6 (mean 6) _____

**d.** 2, 5, 8, 9, 11 (mean 7) _____

**3.** **Pets.** The dot plot shows the number of pets 8 students have.

**a.** Mean: _____ pets

**b.** MAD: _____ pets




**Number of Pets**

**4.** **Wait Times.** Six patients waited 10, 14, 15, 17, 18, and 22 minutes at a clinic. Find the mean and the MAD.

*Show your work.*

**Mean and MAD** _____

**5.** **Find the Error.** For 3, 5, 9, 11, 12 (mean 8), Eli found the distances 5, 3, 1, 3, 4. Their sum is 16. He wrote MAD = 16 ÷ 8 = 2. Explain his error and find the MAD.

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Tell someone at home what a MAD of 0 would mean for a set of test scores.

Name _____ Date _____ Period _____

**LESSON 2-9 · HOMEWORK PACKET · SHEET 2 OF 2**

# Comparing Data Sets Using MAD

Maryland Standard 6.SP.B.5c · Learning target – I can compare two data sets that share a mean by comparing their mean absolute deviations.

**REMEMBER**

- When two data sets have the **same mean**, compare their MADs. State both numbers.
- A **smaller MAD** means values are closer to the mean: more **consistent**. A larger MAD means more **variability**.

**WORKED EXAMPLE**

Baker A's loaves: 496, 500, 500, 504 g. Baker B's: 488, 496, 504, 512 g. Both means are 500 g. Who is more consistent?

**Step 1** A's distances: 4, 0, 0, 4. MAD = 8 ÷ 4 = 2 g

**Step 2** B's distances: 12, 4, 4, 12. MAD = 32 ÷ 4 = 8 g

**Answer** **Baker A (MAD 2 g versus 8 g)**

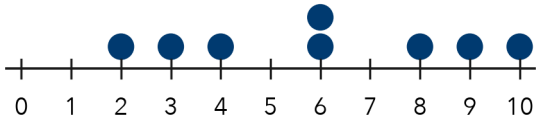
## PRACTICE

*show your work · label units*

**1.** **Basketball.** Both players have a mean of 12 points. **Kai:** 10, 11, 12, 13, 14. **Leo:** 4, 8, 12, 16, 20.

**a.** Kai's MAD: ____ **b.** Leo's MAD: ____ **c.** More consistent: ____

**2.** **Summer Reading.** The dot plot shows the books read by 8 students in Club B. Club A has a mean of 6 books and a MAD of 0.5 book.




**Books Read (Club B)**

**a.** Club B mean: _____

**b.** Club B MAD: _____

**c.** More spread out: _____

**3.** **Tomatoes Picked.** Both means are 20. **Garden A:** 18, 19, 21, 22. **Garden B:** 12, 16, 24, 28.

**a.** A's MAD: ____ **b.** B's MAD: ____ **c.** More consistent: ____

**4.** **Bus Routes.** Both routes have a mean time of 24 min. Route 5: MAD 1.5 min. Route 9: MAD 6 min. Which is more predictable?

☐ Route 5 ☐ Route 9 ☐ They are the same

**5.** **Find the Error.** Jordan says Set R (49, 50, 50, 51) must have a greater MAD than Set S (2, 6, 14, 18) because its numbers are bigger. Find both MADs and explain.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Sets A and B both have a mean of 40. A's MAD is 2.5. B's MAD is 8. Which is true?

**A** A varies less. **B** B varies less. **C** Same spread. **D** Cannot tell.

**7.** What is the MAD of 3, 5, 7, 9?

**A** 0 **B** 2 **C** 6 **D** 8

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

**LESSON 2-10 · HOMEWORK PACKET · SHEET 1 OF 2**

# Mean or Median?

Maryland Standard 6.SP.B.5d · Learning target – I can choose the mean or the median to describe a data set based on its shape.

**REMEMBER**

- **Symmetric** data with no outliers: the mean and median are close. Use the **mean**.
- **Skewed** data or data with an **outlier**: the mean is pulled toward the tail. Use the **median**. If the mean and median are far apart, the median is safer.

**WORKED EXAMPLE**

Eight commutes took 12, 14, 15, 15, 16, 17, 18, and 61 minutes. Which center is better?

**Step 1** 61 is an outlier, so the data is skewed right.

**Step 2** Median: (15 + 16) ÷ 2 = 15.5. Mean: 168 ÷ 8 = 21, greater than 7 of the 8 times.

**Answer** **The median, 15.5 minutes**

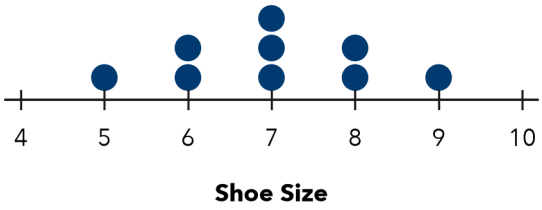
## PRACTICE

*show your work · label units*

**1.** Write mean or median for the better measure of center.

**a.** 40, 42, 44, 46, 48 ____ **b.** 3, 40, 42, 44, 46, 48 ____ **c.** 8, 9, 10, 11, 12, 13, 75 ____

**2.** **Shoe Sizes.** The dot plot shows the shoe sizes of 9 students.



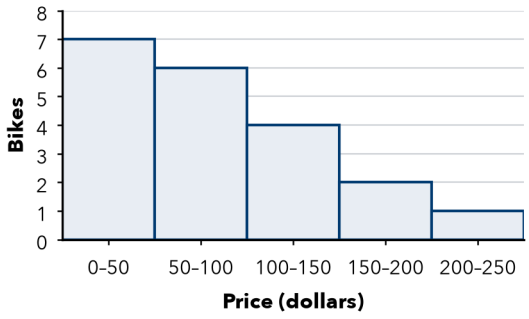

**a.** Shape: _____

**b.** Mean: _____

**c.** Median: _____

**d.** Better center: _____

**3.** **Used Bikes.** The histogram shows the prices of 20 used bikes.




**a.** Shape: _____

**b.** Greater, mean or median? _____

**c.** Better center: _____

**4.** **Allowances.** Six friends get weekly allowances of $5, $6, $8, $8, $10, and $41.

**a.** Mean: $ ____ **b.** Median: $ ____ **c.** Better center: _____

**5.** **Honest Ads.** A shop pays its 5 workers $30,000, $32,000, $34,000, $36,000, and $178,000 a year. Its ad says, "Average pay: $62,000!" Why is this misleading? What center is better?

_____

_____

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask someone at home: for house prices, is the mean or the median greater? Why?

Name _____ Date _____ Period _____

**LESSON 2-10 · HOMEWORK PACKET · SHEET 2 OF 2**

# Matching Center and Spread

Maryland Standard 6.SP.B.5d · Learning target – I can match a measure of center and a measure of spread to the shape of a data set.

**REMEMBER**

- Symmetric, no outliers: **mean and MAD**. Skewed or outliers: **median and IQR**.
- Do not mix the pairs. A summary names the shape, center, and spread.

**WORKED EXAMPLE**

Seven friends sent 3, 4, 5, 6, 7, 8, and 40 texts. Summarize the data.

**Step 1** 40 is an outlier: use the median and IQR.
**Step 2** Median = 6. Q1 = 4, Q3 = 8, IQR = 4
**Answer** **Median 6 texts, IQR 4 texts**

## PRACTICE

*show your work · label units*

**1.** Write the pair you would report: mean and MAD, or median and IQR.

**a.** 15, 16, 17, 18, 19 _____

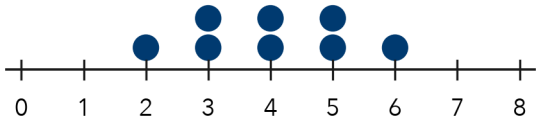
**b.** 15, 16, 17, 18, 19, 20, 95 _____

**2.** **Books Read.** Books read by 8 students in a month.

**a.** Pair to report: _____

**b.** Center: _____ books

**c.** Spread: _____ books



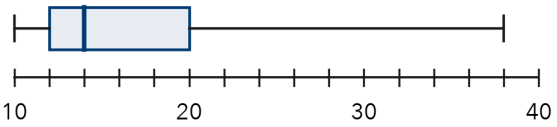

**Books Read**

**3.** **Wait Times.** Deli wait times, in minutes.

**a.** Shape: _____

**b.** Median: _____ min

**c.** IQR: _____ min




**4.** **Phone Calls.** Seven calls lasted 12, 15, 16, 18, 20, 22, and 70 minutes.

**a.** Pair: _____ **b.** Median: ___ min **c.** IQR: ___ min

**5.** **Find the Error.** Kenji says 2, 20, 21, 22, 23, 24, 25 is not skewed because no value is far above the rest. He reports the mean and MAD. Explain his error.

_____

_____

## TEST PRACTICE

*choose the best answer*

**6.** Which pair best describes 21, 23, 24, 25, 26, 27, 80?

**A** mean and MAD **B** median and IQR **C** mean and IQR **D** median and MAD

**7.** A histogram is tall in the middle, with short, equal bars on both ends. Which pair should you report?

**A** mean and MAD **B** median and IQR **C** mean and IQR **D** median and MAD

**CHECK YOURSELF** ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

**AT HOME** Ask someone at home: for the prices of all cars on a street, would you report the mean or the median? Why?