Unit 9: Statistical Measures & Data Displays — Basketball Stats, Outlier Prices & Bird Puzzle Trials

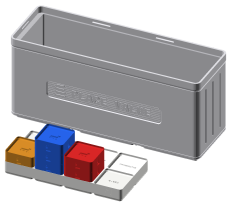
Mean as Fair Share, Median, Mode, Range, Quartiles, Interquartile Range (IQR), Box Plots & MAD

When Leo looked up the prices of five video games—$20, $25, $20, $30, and a rare $105 collector's edition—and calculated the average price as $40, he thought he must have divided wrong. How could the 'average' game be more expensive than four of the five games on the shelf? Meanwhile, on the basketball court, Maya wanted an 85 average across five quizzes after scoring 80, 88, 82, and 84 on the first four, and felt stuck trying to guess what she needed on Quiz 5.

Over in the bird lab, Zoe had an even subtler puzzle. Raven A and Crow B both averaged 9 seconds to unlock a puzzle box across four trials, so on paper the two birds looked identical—even though Raven A finished in a rock-steady 8, 9, 9, and 10 seconds while Crow B swung wildly between 6 and 12 seconds.

And when Maya looked at a box-and-whisker plot of 60 pine trees in the forest, she initially assumed the longest whisker held the most trees—until she learned how quartiles actually split a sorted list into four equal 25% groups.

At first, all the data vocabulary—mean, median, quartiles, IQR, and MAD—sounded like alphabet soup. By working out the data tables by hand first and then entering the data list with `[Σ+]` on the SC-6 to check `[x-bar]`, `[MED]`, `[IQR]`, and `[MAD]`, Maya, Leo, and Zoe learn how to read any data set accurately.



Real-World Mathematical Context & Two-Method Mastery • Hands-On Models: Place Value Blocks & Fraction Strips

UNIT 9 LESSONS — LEARN TWO TEXTBOOK WAYS FIRST, THEN CHECK YOUR WORK ON THE SC-6 CALCULATOR

SEC 9.1 (pp.86-87) Statistical Questions, Dot Plots, and the Mean

Textbook Ways: Way 1: Mean Formula (Sum ÷ Count) | Way 2: Fair-Share Block Leveling | Way 3: Balance Point Deviations

Learn by Hand: The mean (or average, x-bar) of a numerical data set is the sum of the data values divided by the number of data values: x-bar = (Σx) ÷ n. Physically, the mean represents a 'fair share'—if you build cube towers for each data value and move cubes from taller towers to shorter towers until all towers have the exact same height, that common height is the mean!

Check Your Work on the SC-6 Calculator:

[g] [CLΣ] 1 8 [Σ+] 2 4 [Σ+] 1 5 [Σ+] 2 7 [Σ+] 2 1 [Σ+] [g] [x̄]

Add the 5 values and divide by 5 on paper first. On your SC-6, clear stats with [g][CLΣ], enter each value with [Σ+] (or view the dot plot in [FRQ] mode), and press [g][x-bar] to confirm Mean = 21!

SEC 9.2 (pp.88-89) Measures of Center: Median, Mode, and Range

Textbook Ways: Way 1: Ordered List (Least to Greatest) | Way 2: Dot Plot / Frequency Table Analysis

Learn by Hand: When data values are ordered from least to greatest: the Median is the middle value (or the mean of the two middle values when the count n is even); the Mode is the value(s) that occur most often; and the Range is the difference between the greatest and least values (Max - Min). When an extreme outlier is present, the median is usually the best measure of center.

Check Your Work on the SC-6 Calculator:

[g] [CLΣ] 7 [Σ+] 9 [Σ+] 6 [Σ+] 7 [Σ+] 1 0 [Σ+] 8 [Σ+] 9 [Σ+] 7 [Σ+] [f] [MED] [g] [MODE] [RNG]

Press [g][CLΣ], enter each number with [Σ+] (or [FRQ]), and press [f][MED], [g][MODE], and [RNG] to verify Median = 7.5, Mode = 7, and Range = 4!

SEC 9.3 (pp.90-91) Quartiles, Interquartile Range (IQR) & Box Plots

Textbook Ways: Way 1: Split Ordered Data into Lower & Upper Halves | Way 2: Box-and-Whisker Plot & 25% Quartile Sections

Learn by Hand: Quartiles divide an ordered data set into four equal parts (each containing 25% of the data). The median (Q2) divides the data into a lower half and an upper half; the first quartile (Q1) is the median of the lower half, and the third quartile (Q3) is the median of the upper half. The Interquartile Range (IQR = Q3 - Q1) measures the spread of the middle 50% of the data.

Check Your Work on the SC-6 Calculator:

[f] [MIN] [f] [1Q] [f] [MED] [g] [3Q] [g] [MAX] [IQR]

Order the data and split into lower and upper halves on paper first. After entering the list with [Σ+] on your SC-6, press [f][MIN], [f][1Q], [f][MED], [g][3Q], [g][MAX], and [IQR] to check all 5 box-plot values and IQR = 16.5!

SEC 9.4 (pp.92-93) Mean Absolute Deviation (MAD)

Textbook Ways: Way 1: 3-Step MAD Distance Table | Way 2: Number-Line Deviation Balance

Learn by Hand: The Mean Absolute Deviation (MAD) is a measure of variation that tells the average distance between each data value and the mean. To find the MAD in 3 steps: (1) Find the mean x-bar of the data. (2) Find the absolute distance |x - x-bar| of each data value from the mean. (3) Find the mean of those absolute distances!

Check Your Work on the SC-6 Calculator:

[g] [CLΣ] 1 0 [Σ+] 1 2 [Σ+] 1 4 [Σ+] 1 6 [Σ+] 1 8 [Σ+] [g] [x̄] [g] [MAD]

Press [g][CLΣ], enter each value with [Σ+], and press [g][x-bar] (14) and [g][MAD] (2.4)!

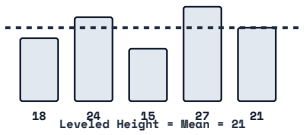
HANDS-ON MODEL: PLACE VALUE BLOCKS

Section 9.1 — Practice A: Statistical Questions, Dot Plots, and the Mean

Key Vocabulary: statistical question • dot plot • peak • cluster • gap • measure of center • mean (fair share) Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (PLACE VALUE BLOCKS)

Way 2: Fair-Share Tower Leveling



Way 1 & 3: Mean Formula & Balance Point

Way 1: Sum ÷ Count = 105 ÷ 5 = 21

Way 3 (Dot Plot Balance at 21):

Left: (21-15) + (21-18) = 6 + 3 = 9

Right: (24-21) + (27-21) = 3 + 6 = 9

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: A statistical question anticipates variability. The mean (x-bar) is the sum of all data values divided by the number of values (Σx ÷ n).

Textbook Visual Model (Fair-Share / Balance Point): The mean is the leveled height when blocks are shared equally, or the balance point on a dot plot.

WATCH OUT: When finding a missing score for a target mean, multiply Target Mean × Total Count FIRST to find the required sum!

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Find the sum, the number of values, and the mean of 18, 24, 15, 27, 21.

WAY 1: Mean Formula (Sum Divided by Number of Values)
Add the 5 values: 18 + 24 + 15 + 27 + 21 = 105. Divide by n = 5 values: Mean = 105 ÷ 5 = 21.

WAY 2: Fair-Share Tower Leveling (With Blocks)
Shift 6 blocks from 27 to 15 (→ 21, 21) and 3 blocks from 24 to 18 (→ 21, 21). All 5 leveled towers equal 21.

WAY 3: Dot Plot Balance Point
On a number line centered at 21, distances left (-6 and -3 = -9) balance distances right (+3 and +6 = +9).

Answer: Sum = 105, Count = 5, Mean = 21

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.1 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[g] [CLΣ] 1 8 [Σ+] 2 4 [Σ+] 1 5 [Σ+] 2 7 [Σ+] 2 1 [Σ+] [g] [x̄]

Add the 5 values and divide by 5 on paper first. On your SC-6, clear stats with [g][CLΣ], enter each value with [Σ+] (or view the dot plot in [FRQ] mode), and press [g][x-bar] to confirm Mean = 21!

SECTION 9.1 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Find the sum and the mean of the data set: 2, 4, 6, 8.**
Starter Step 1: Add all 4 data values together to find the total sum, then divide that sum by 4.

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Find the sum and the mean of the data set: 12, 15, 18, 11, 14.**
Starter Step 1: Add all 5 data values together to find the total sum, then divide that sum by 5.

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Seed-Bomber Catapult Mean: In three test launches, a seed-bomber catapult flings clay seed pods distances of 150 cm, 162 cm, and 156 cm. What is the mean launch distance?**

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Find the mean of these four mineral sample masses (in grams): 4.2, 3.8, 4.5, 3.5.**

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Three measurements are 10, 20, and 25. Find the sum and the mean (rounded to the nearest hundredth).**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **In a dot plot of 6 quiz scores, the score 10 appears 4 times and the score 20 appears 2 times. What is the mean of all 6 scores (rounded to the nearest hundredth)?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Find the mean daily high temperature (°F) for the 6-day period: 68, 72, 75, 71, 64, 70.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **If 5 stacks of blocks have a mean height of 12 blocks, how many total blocks are in all 5 stacks combined?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Target Test Average: You want a mean of 90 across 4 unit tests. Your first three scores are 85, 92, and 88. What score do you need on the fourth test?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Joining the Roster: Six basketball players have a mean score of 15 points per game. A seventh player joins the team and scores 29 points. What is the new mean score for all 7 players?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: PLACE VALUE BLOCKS

Section 9.1 — Practice B: Modeling Real Life (Statistical Questions, Dot Plots, and the Mean)

Textbook Ways: Mean Formula (Sum ÷ Count) | Fair-Share Block Leveling | Balance Point Deviations Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — FINDING A MISSING SCORE FOR A TARGET MEAN (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: You want a mean score of 90 across 4 math quizzes. Your first 3 quiz scores are 86, 92, and 88. What score do you need on Quiz 4?

WAY 1: Target Total Sum Minus Current Sum
4 quizzes × 90 mean = 360 total points needed. Current sum = 86 + 92 + 88 = 266. Quiz 4 = 360 - 266 = 94.

WAY 2: Balance Deviations Around 90
Compare each score to 90: 86 is -4, 92 is +2, and 88 is -2 (net = -4). Quiz 4 must be +4 above 90 → 90 + 4 = 94.

WAY 3: Solve the Mean Equation (266 + x) / 4 = 90
Multiply both sides by 4: 266 + x = 360. Subtract 266 from both sides: x = 94.

WATCH OUT: When finding a missing score for a target mean, multiply Target Mean × Total Count FIRST to find the required sum!

Answer: 94

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.1 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

4 ENTER 9 0 × 8 6 ENTER 9 2 + 8 8 + -

Multiply 4 tests × 90 = 360 and subtract the first 3 scores on paper first. Check on your SC-6:
Press 4 [ENTER] 90 [×] 86 [ENTER] 92 [+] 88 [+] [-] to confirm 94.

Maya scored 80, 88, 82, and 84 on her first four math quizzes and wanted a mean (average) of 85 across all five quizzes, but she felt stuck trying to guess and check different numbers for Quiz 5. Then she pictured her quiz scores as five towers of blocks that get leveled out to the exact same height of 85. For five towers to each stand 85 blocks tall, there MUST be 5 × 85 = 425 blocks in total! Since her first four quizzes already added up to 80 + 88 + 82 + 84 = 334 points, subtracting 425 - 334 = 91 told her the exact score she needed on Quiz 5 without a single guess.

SECTION 9.1 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Basketball Points Per Game: In 5 games, Maya scored 14, 18, 12, 22, and 19 points. What is the sum of her points, and what is her mean number of points per game?**

Starter Step 1: Add Maya's 5 game scores together to find her total points, then divide the sum by 5 games.

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **3D Print Batch Weights: Six printed parts weigh 41 g, 43 g, 42 g, 40 g, 44 g, and 42 g. What is the mean weight of the parts?**

Starter Step 1: Add all 6 part weights together, then divide the total weight by 6 parts.

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Quiz Dot Plot: On a 10-point quiz, three students scored 8, five students scored 9, and two students scored 10. What is the mean score of all 10 students?**

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Target Test Average: You want a mean score of 85 across 5 tests. Your first 4 test scores are 80, 88, 82, and 84. What score do you need on the fifth test?**

Way 1 (Paper Work):

Sum = _____ Count n = ___

Mean = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Daily Step Counter: Over 4 days you walked 8,200, 9,500, 7,800, and 10,500 steps. What was your mean number of steps per day?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Dropping the Lowest Quiz: A student's 4 quiz scores are 60, 88, 92, and 90. Find the mean of all 4 quizzes, and then find the new mean if the lowest score (60) is dropped.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Fair-Share Leveling: Four stacks of books have 6, 10, 14, and 18 books. If you move books so all four stacks have the same number of books, how many books will be in each stack?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Bluebird Chick Growth: Five nestling bluebirds gained 4.2 g, 5.1 g, 4.8 g, 5.5 g, and 4.4 g this week. What was the mean weight gain?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Explain why 'How many minutes did students in our class read last night?' is a statistical question, while 'How many minutes are in 1 hour?' is not.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Combined Group Mean: In a trivia game, Group A has 4 students with a mean of 20 points, and Group B has 6 students with a mean of 30 points. What is the mean score of all 10 students combined?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.2 — Practice A: Measures of Center: Median, Mode, and Range

Key Vocabulary: median (middle value) • mode (most frequent) • range (max - min) • outlier • best measure of center Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Measures of Center & Variation: ALWAYS Order Data Least to Greatest First!

6	7	7	7	8	8	9	10

Mode = 7 (Most frequent: 3 times)

Median (Even n=8): (7 + 8) ÷ 2 = 7.5

Range = Max - Min = 10 - 6 = 4 | Use Median when an Outlier skews the Mean!

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: ALWAYS order data from least to greatest first! Median = middle value (or mean of two middle values if n is even); Mode = most frequent; Range = Max - Min.

Textbook Choosing the Best Measure: Use the Median when an extreme outlier skews the Mean; use the Mean when data are symmetric with no outliers.

WATCH OUT: ALWAYS sort the data from least to greatest BEFORE finding the Median! If n is even, average the two middle numbers.

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Find the mean, median, mode, and range of the shoe sizes: 7, 9, 6, 7, 10, 8, 9, 7.

WAY 1: Order from Least to Greatest & Cross Off Ends

Ordered (n = 8): 6, 7, 7, [7, 8], 9, 9, 10. Median = (7 + 8) ÷ 2 = 7.5; Mode = 7 (three times); Range = 10 - 6 = 4.

WAY 2: Dot Plot / Frequency Table

Frequencies: 6(1), 7(3), 8(1), 9(2), 10(1). Tallest column = Mode (7); 4th and 5th dots = 7 and 8 → Median 7.5; span = 10 - 6 = 4.

Answer: Mean = 7.875, Median = 7.5, Mode = 7, Range = 4

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.2 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

g CLΣ 7 Σ+ 9 Σ+ 6 Σ+ 7 Σ+ 1 0 Σ+ 8 Σ+ 9 Σ+ 7 Σ+ f MED g MODE RNG

Order the numbers from least to greatest on paper first! Then check on your SC-6:

Press [g][CLΣ], enter each number with [Σ+] (or [FRQ]), and press [f][MED], [g][MODE], and [RNG] to verify Median = 7.5, Mode = 7, and Range = 4!

SECTION 9.2 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Shoe Size Survey Mode: A sneaker store records the shoe sizes of 8 customers: 6, 7, 7, 7, 8, 8, 9, 10. What is the mode of the shoe sizes?**

Starter Step 1: Count how many times each shoe size appears—the Mode is the value that repeats MOST often.

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Find the median, mode, and range of the data set: 12, 15, 12, 18, 20, 13.**

Starter Step 1: Sort the 6 numbers from least to greatest FIRST, then average the two middle numbers (3rd and 4th) for the Median.

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Find the mean, median, mode, and range of the data set: 5, 8, 8, 10, 14.**

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **High Temperature Range: Over 7 days, the high temperatures (°F) were 62, 65, 78, 81, 74, 69, and 85. What are the minimum, maximum, and range of the temperatures?**

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Even-Dataset Median: Six daily high temperatures (°F) are ordered from least to greatest: 68, 72, 74, 76, 80, 84. What is the median temperature?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Daily earnings are $15, $18, $15, $20, $17, and $90. Find the mean and median, and state which measure better represents a typical day.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **How do the mean and the median of {10, 12, 14, 16, 18} change if the value 18 is replaced by the outlier 100?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **The minimum score on a science test is 64 and the range of the scores is 31. What was the maximum score on the test?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Find the median and range of the data set {14, 8, 21, 11, 16}.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Neighborhood Home Prices: Five homes on a street sold for (in thousands of dollars): 210, 220, 215, 225, and 980. Find the mean and median sale prices, and explain which measure a home buyer should use.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.2 — Practice B: Modeling Real Life (Measures of Center: Median, Mode, and Range)

Textbook Ways: Ordered List (Least to Greatest) | Dot Plot / Frequency Table Analysis Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — CHOOSING THE BEST MEASURE OF CENTER WITH AN OUTLIER (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: Daily dog-walking earnings for 6 days are $15, $18, $15, $20, $17, and $90. Find the mean, median, and mode. Which measure best represents a typical day?

WAY 1: Compare Mean vs. Ordered Median & Mode

Mean = $175 ÷ 6 ≈ $29.17. Ordered: $15, $15, [$17, $18], $20, $90 → Median = $17.50, Mode = $15. Median ($17.50) is best because $90 is an outlier.

WAY 2: Compare With and Without the $90 Outlier

Without $90, the mean is $85 ÷ 5 = $17.00 and median is $17.00. The $90 outlier pulls the mean up by +$12.17 (above 5 of the 6 days!), while the median barely changes.

Rule: When an extreme outlier is present, use the Median instead of the Mean.

WATCH OUT: ALWAYS sort the data from least to greatest BEFORE finding the Median! If n is even, average the two middle numbers.

Answer: Mean = $29.17, Median = $17.50, Mode = $15 (Median is best)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.2 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[g] [CLΣ] 1 5 [Σ+] 1 8 [Σ+] 1 5 [Σ+] 2 0 [Σ+] 1 7 [Σ+] 9 0 [Σ+] [g] [x̄] [f] [MED]

Sort the 6 prices on paper first to see how the $90 outlier pulls the mean up. Enter all 6 prices with [Σ+] on your SC-6 and compare [g][x-bar] ($29.17) against [f][MED] ($17.50)!

When Leo calculated the average price of five video games ($20, $25, $20, $30, and a rare $105 collector's edition) and got $40, he thought he had messed up the division—how could the 'average' price be higher than four of the five games?! He also admitted he sometimes forgot to put numbers in order before picking the middle number (the median). Lining the prices up from least to greatest ($20, $20, $25, $30, $105), he saw why statistics has more than one kind of average: that single $105 outlier yanked the mean up to $40, while the median ($25) sat right in the middle and told the honest truth about what a typical game costs.

SECTION 9.2 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Roller Coaster Speeds: Seven roller coasters have top speeds (in mph) of 55, 62, 48, 70, 62, 50, and 66. Find the median, mode, and range of the speeds.**

Starter Step 1: Sort all 7 coaster speeds from least to greatest FIRST—the middle (4th) value is the Median!

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Coding Club Ages: Six club members have ages 11, 13, 12, 14, 12, and 16. Find the median, mode, and range of their ages.**

Starter Step 1: Sort the 6 ages from least to greatest FIRST, then find the average of the two middle ages for the Median.

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Video Game Prices & Outliers: Five video games cost $20, $25, $20, $30, and $105. Find the mean, median, and mode. Which measure of center best represents the price of a typical game, and why?**

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Shoe Size Modes: Find the mode(s) and median of the shoe sizes: 5, 6, 6, 6, 7, 8, 8, 8, 9.**

Way 1 (Paper Work):

Sorted: [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Med: _____ Mode: _____ Rng: _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Sprint Times: Five runners finish a race in 11.2, 11.5, 11.8, 12.1, and 12.4 seconds. Find the median, range, and mode (if any).**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Weekly High Temperatures: This week's daily high temperatures (°F) were 72, 68, 75, 81, 64, 70, and 74. Find the minimum, maximum, range, and median.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Pizza Orders: Daily orders of mushroom pizza over 6 days were 8, 12, 9, 15, 12, and 10. Find the mean, median, mode, and range.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Mystery Data Set: Write a data set of 5 whole numbers that has a median of 10, a mode of 8, and a range of 7.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Bonus Points Effect: Five students scored 70, 75, 80, 85, and 90 on a quiz. If the teacher adds 5 bonus points to every student's score, how do the median and the range change?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Backpack Weights: Eight student backpacks weigh 9, 12, 10, 14, 11, 15, 10, and 13 pounds. Find the mean, median, mode, and range.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.3 — Practice A: Quartiles, Interquartile Range (IQR) & Box Plots

Key Vocabulary: quartiles • first quartile (Q_1) • third quartile (Q_3) • interquartile range (IQR = Q_3 - Q_1) • box-and-whisker plot • 5-number summary

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Box-and-Whisker Plot: 5-Number Summary & Interquartile Range (IQR = Q_3 - Q_1)



Middle 50% Box = IQR = Q_3 - Q_1 = 90 - 73.5 = 16.5 | Range = Max - Min = 28

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook 5-Number Summary: Order data to find Min, Q_1 (median of lower half), Median (Q_2), Q_3 (median of upper half), and Max.

Textbook Box-and-Whisker Plot & IQR: The box spans the middle 50% of data from Q_1 to Q_3; Interquartile Range IQR = Q_3 - Q_1. Each section holds 25% of the data.

WATCH OUT: When n is odd, DO NOT include the overall Median in either the lower half or upper half when finding Q_1 and Q_3!

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Find the 5-Number Summary (Min, Q1, Median, Q3, Max) and IQR of: 68, 72, 75, 78, 82, 85, 88, 92, 96.

WAY 1: Find Medians of the Lower and Upper Halves

Ordered (n=9): 68, 72, 75, 78, [82], 85, 88, 92, 96. Med = 82. Lower half (68, 72, 75, 78) → Q_1 = 73.5. Upper half (85, 88, 92, 96) → Q_3 = 90. IQR = 90 - 73.5 = 16.5.

WAY 2: Read the 5-Number Summary on a Box Plot

Plot whiskers at Min = 68 and Max = 96, box from Q_1 = 73.5 to Q_3 = 90, and line at Med = 82. Box width = 90 - 73.5 = 16.5.

Answer: Min = 68, Q1 = 73.5, Med = 82, Q3 = 90, Max = 96; IQR = 16.5

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.3 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

f MIN f 1Q f MED g 3Q g MAX IQR

Order the data and split into lower and upper halves on paper first. After entering the list with [Σ+] on your SC-6, press [f][MIN], [f][1Q], [f][MED], [g][3Q], [g][MAX], and [IQR] to check all 5 box-plot values and IQR = 16.5!

SECTION 9.3 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **For the ordered data set 10, 20, 30, 40, 50, find the 5-Number Summary (Min, Q1, Median, Q3, Max) and the IQR.**

Starter Step 1: Find the middle number (Median) of the sorted list first, then find the median of the lower half (Q_1) and upper half (Q_3).

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **For the ordered data set 4, 6, 8, 10, 12, 14, 16, find Q1, Median, Q3, and the IQR.**

Starter Step 1: The 4th number is the Median; find the middle of the lower 3 numbers for Q_1 and the upper 3 numbers for Q_3, then subtract Q_3 - Q_1.

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **If a box-and-whisker plot has Q1 = 24 and Q3 = 58, what is the Interquartile Range (IQR)?**

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **What percent of the data in a box-and-whisker plot falls above the first quartile (Q1)?**

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Grade 6 Science Scores IQR: Eight ordered science test scores are 65, 72, 75, 80, 84, 88, 92, 96. Find Q1, Median, Q3, and the Interquartile Range (IQR).**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Find Q1, Median, Q3, and the IQR for the 8 ordered wind speeds (mph): 42, 45, 48, 50, 52, 55, 58, 60.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Player A's game scores have an IQR of 4 points, while Player B's scores have an IQR of 19 points. Which player is more consistent? Explain.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Outlier Fence Rule: A data set has Q_1 = 40 and Q_3 = 60. First find the IQR. Then find the upper outlier cutoff by adding 1.5 × IQR to Q_3.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Find Q1, Median, Q3, and the Interquartile Range (IQR) for the data set {12, 15, 18, 22, 25, 28, 34}.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Grade-Level Benchmark Exam: Exactly 200 sixth graders take a benchmark exam whose box plot has Min = 50, Q1 = 70, Median = 80, Q3 = 90, and Max = 100. About how many students scored between 70 and 90?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.3 — Practice B: Modeling Real Life (Quartiles, Interquartile Range (IQR) & Box Plots)

Textbook Ways: Split Ordered Data into Lower & Upper Halves | Box-and-Whisker Plot & 25% Quartile Sections Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — INTERPRETING A BOX-AND-WHISKER PLOT (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: A box-and-whisker plot of 40 test scores has Min = 60, Q_1 = 72, Median = 80, Q_3 = 88, and Max = 98. Find the IQR and how many students scored between 72 and 88.

WAY 1: Use Four 25% Quartile Sections

IQR = Q_3 - Q_1 = 88 - 72 = 16 points. The box from Q_1 (72) to Q_3 (88) spans 2 quartile sections = 25% + 25% = 50% of 40 = 20 students.

WAY 2: Divide Total Students into 4 Equal Quarters

40 students ÷ 4 quarters = 10 students in each section (Min–Q_1: 10, Q_1–Med: 10, Med–Q_3: 10, Q_3–Max: 10). Middle two sections = 10 + 10 = 20 students.

Check: 10 + 10 + 10 + 10 = 40 students (100%).

WATCH OUT: When n is odd, DO NOT include the overall Median in either the lower half or upper half when finding Q_1 and Q_3!

Answer: IQR = 16; 20 students (50%)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.3 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

2 5 ENTER 2 ×

Remember each section of a box plot holds 25% of the data (so the middle box holds 50%). Check 50% of 40 students on your SC-6 (40 [ENTER] 50 [%]) to confirm 20 students.

Looking at a box-and-whisker plot of 60 pine trees (Min = 12 ft, Q_1 = 18 ft, Median = 24 ft, Q_3 = 31 ft, Max = 40 ft), Maya initially thought the longest section of the drawing held the most trees. When her coach asked how many trees were taller than 18 feet, she wasn't sure how a box plot could even tell you a headcount. Then she realized how the plot is built: ordering 60 trees and splitting them at the median, Q_1, and Q_3 chops the list into four equal groups of 15 trees (25% in each section), no matter how stretched out or squished a section looks! Since three of the four quarters sit above Q_1 (18 ft), 75% of the 60 trees—45 trees—are taller than 18 feet.

SECTION 9.3 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Archery Scores: Seven ordered archery scores are 40, 45, 50, 55, 60, 65, and 70. Find the 5-number summary (Min, Q_1, Median, Q_3, Max) and the interquartile range (IQR).**

Starter Step 1: Find the middle (4th) score for the Median, then find the middle of the lower 3 scores (Q_1) and upper 3 scores (Q_3).

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Battery Life Test: Eight laptops lasted 6, 7, 8, 9, 11, 12, 14, and 15 hours on a battery test. Find Q_1, the median, Q_3, and the IQR.**

Starter Step 1: Split the 8 sorted hours into the lower 4 and upper 4; average each pair of middle numbers to find Median, Q_1, and Q_3.

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Robotics Scores: Nine teams scored 30, 15, 45, 25, 35, 20, 50, 40, and 30 points. Order the data and find Q_1, the median, Q_3, and the IQR.**

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Tree Height Box Plot: A box-and-whisker plot of 60 tree heights shows Min = 12 ft, Q_1 = 18 ft, Median = 24 ft, Q_3 = 31 ft, and Max = 40 ft. Find the range and the IQR.**

Way 1 (Paper Work):

Min:___ Q1:___ Med:___ Q3:___ Max:___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Using the tree height box plot in Problem 4 (60 trees total), what percent of the trees are taller than 18 feet, and how many trees is that?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Using the same 60-tree box plot in Problem 4, how many trees are in the top quartile between 31 feet and 40 feet?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Comparing Consistency: On a math test, Class A has an IQR of 8 points and Class B has an IQR of 19 points. Which class had more consistent scores in the middle 50%?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Outlier Fence Rule: A data set has Q_1 = 20 and Q_3 = 30. An upper outlier is any data value greater than $Q_3 + 1.5 \times$ IQR. What is the upper outlier boundary for this data set?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Push-Up Challenge: Six students completed 18, 22, 25, 29, 34, and 40 push-ups. Find the 5-number summary and the IQR.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Effect of an Outlier on Spread: For the data set {10, 12, 14, 16, 18, 20, 100}, find both the range and the IQR. Why is the IQR a better measure of variation for this data set?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.4 — Practice A: Mean Absolute Deviation (MAD)

Key Vocabulary: mean absolute deviation (MAD) • deviation from the mean (|x - x-bar|) • measure of variation • consistency

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Mean Absolute Deviation (MAD): Average Distance of Data Values from the Mean

Data: {10, 12, 14, 16, 18} → Mean = 14



Distances |x - 14|: 4, 2, 0, 2, 4

3-Step MAD Recipe:

1. Find Mean = 70 ÷ 5 = 14
2. Sum |x - 14| = 4+2+0+2+4 = 12
3. MAD = 12 ÷ 5 = 2.4

(Smaller MAD = More Consistent!)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook 3-Step MAD Algorithm: 1. Find the Mean (x-bar). 2. Find the absolute distance |x - x-bar| of each value from the mean. 3. Average those distances (Sum ÷ n).

Textbook Interpretation: A smaller MAD means the data values are clustered tightly near the mean (more consistent); a larger MAD means more spread out.

WATCH OUT: Distances |x - Mean| are ALWAYS positive (subtract the smaller number from the larger for every data value)!

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Find the mean and the Mean Absolute Deviation (MAD) of 10, 12, 14, 16, 18.

WAY 1: 3-Step MAD Distance Table

For {10, 12, 14, 16, 18}: 1. Mean = 70 ÷ 5 = 14. 2. Distances |x - 14|: 4, 2, 0, 2, 4. 3. Average the distances: (4+2+0+2+4) ÷ 5 = 12 ÷ 5 = 2.4.

WAY 2: Number-Line Deviation Balance (Below vs. Above Mean)

Distances below 14 (4 + 2 = 6) equal distances above 14 (2 + 4 = 6). Double one side (2 × 6 = 12) and divide by 5 → MAD = 2.4.

Answer: Mean = 14, MAD = 2.4

1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.4 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[g] [CLΣ] 1 0 [Σ+] 1 2 [Σ+] 1 4 [Σ+] 1 6 [Σ+] 1 8 [Σ+] [g] [x̄] [g] [MAD]

Make your 3-step MAD table (mean, absolute distances, average of distances) on paper first. Then check on your SC-6: Press [g][CLΣ], enter each value with [Σ+], and press [g][x-bar] (14) and [g][MAD] (2.4)!

SECTION 9.4 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Seed-Bomber Catapult MAD: For the three catapult launch distances 150 cm, 162 cm, and 156 cm, find the mean and the Mean Absolute Deviation (MAD).**

Starter Step 1: Average the 3 numbers for the Mean → Step 2: Find each number's distance |x - Mean| → Step 3: Average those distances.

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Find the mean and the MAD of the data set: 10, 12, 14, 16, 18.**

Starter Step 1: Add the 5 values and divide by 5 for the Mean → Step 2: Find each distance from the Mean → Step 3: Divide the distance sum by 5.

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **5-Point Sensor Calibration MAD: Five calibration readings from a pressure sensor are 10, 15, 20, 25, and 30. Find the mean and the Mean Absolute Deviation (MAD).**

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **What is the Mean Absolute Deviation (MAD) of five identical values: 7, 7, 7, 7, 7? Explain.**

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Find the mean and the MAD of the data set: 20, 24, 28, 32, 36.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Find the mean and the MAD of the 6 sprint times (seconds): 12.4, 13.0, 12.6, 13.2, 12.8, 14.0.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Find the mean and the MAD of the quiz scores: 82, 85, 88, 90, 95.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Team A has a mean score of 50 and a MAD of 2.1. Team B has a mean score of 50 and a MAD of 8.4. Which team's scores are more spread out?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **For the data set {6, 10, 11, 13}, find the mean, list the four absolute deviations |x - x-bar|, and compute the MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Complete Statistical Profile: For the data set {5, 8, 8, 10, 14}, find the Mean, Median, Mode, Range, IQR, and MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 9.4 — Practice B: Modeling Real Life (Mean Absolute Deviation (MAD))

Textbook Ways: 3-Step MAD Distance Table | Number-Line Deviation Balance

Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — COMPARING CONSISTENCY WITH MAD (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: A sprinter's six 100-meter dash times are 12.4, 13.0, 12.6, 13.2, 12.8, and 14.0 seconds. Find the mean and the mean absolute deviation (MAD).

WAY 1: 3-Step MAD Calculation

1. Mean = 78.0 ÷ 6 = 13.0 s. 2. Distances from 13.0: 0.6, 0.0, 0.4, 0.2, 0.2, 1.0. 3. Sum = 2.4 s → MAD = 2.4 ÷ 6 = 0.40 s.

WAY 2: Sum Deviations Below & Above 13.0 s

Below 13.0 s: (13.0-12.4) + (13.0-12.6) + (13.0-12.8) = 0.6 + 0.4 + 0.2 = 1.2 s. Above 13.0 s: 0.2 + 1.0 = 1.2 s. Total = 2.4 ÷ 6 = 0.40 s.

Check: Because total distance below the mean (1.2) equals total distance above (1.2), 13.0 is verified as the exact mean!

WATCH OUT: Distances |x - Mean| are ALWAYS positive (subtract the smaller number from the larger for every data value)!

Answer: Mean = 13.0 s; MAD = 0.40 s

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 9.4 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[g][CL] 12.4 [M+] 13.0 [M+] 12.6 [M+] 13.2 [M+] 12.8 [M+] 14.0 [M+] [g][Σ] [g][MAD]

Calculate the mean and average deviation on paper first. Then enter all 6 sprint times with [Σ+] on your SC-6 and press [g][x-bar] (13.0 s) and [g][MAD] (0.40 s) to verify your table!

In the bird-cognition lab, Raven A solved four puzzle trials in 8, 9, 9, and 10 seconds, while Crow B took 6, 8, 10, and 12 seconds. Both birds had the exact same mean (9 seconds), so Zoe wasn't sure how to prove mathematically that Raven A was much more consistent. When she first heard the name 'Mean Absolute Deviation (MAD),' it sounded terrifying—until she read the three words backward: first find each score's Deviation (distance) from the mean of 9, take its Absolute (positive) value so below-average and above-average distances don't cancel out, and take the Mean (average) of those distances! Raven A's average wobble was just 0.5 seconds, compared to 2.0 seconds for Crow B.

SECTION 9.4 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Nozzle Temperatures: Four temperature readings (°C) are 206, 208, 212, and 214. Find the mean and the mean absolute deviation (MAD).**

Starter Step 1: Find the Mean of the 4 temperatures → Step 2: Find how far each reading is from the Mean → Step 3: Average those 4 distances.

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Free-Throw Practice: In 5 practices you made 7, 9, 10, 11, and 13 free throws. Find the mean and the MAD.**

Starter Step 1: Find the Mean of the 5 practices → Step 2: Find each practice's distance from the Mean → Step 3: Average those 5 distances.

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Identical Weights: Five brass weights each weigh 50 grams: 50, 50, 50, 50, 50. What is the mean and what is the MAD? Explain why.**

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Raven vs. Crow Puzzle Times: Raven A solves 4 puzzle boxes in 8, 9, 9, and 10 seconds (Mean = 9 s, MAD = 0.5 s). Crow B takes 6, 8, 10, and 12 seconds. Find Crow B's mean and MAD. Which bird is more consistent?**

Way 1 (Paper Work):

1. Mean = _____
2. |x - Mean|: ____, ____, ____, ____
3. MAD = Sum ÷ n = _____

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Quiz Scores: Five quiz scores are 76, 82, 85, 88, and 94. Find the mean and the MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Drone Hover Altitude: Six hover altitude readings (in meters) are 15, 16, 14, 15, 17, and 13. Find the mean and the MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Summer High Temperatures: Four daily high temperatures (°F) are 80, 84, 86, and 90. Find the mean, list the four absolute deviations, and find the MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Why Absolute Value Matters: For the data set {10, 15, 20}, the mean is 15. What happens if you add the signed deviations (10 - 15), (15 - 15), and (20 - 15) without taking their absolute values?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Cafe Wait Times: Five customers waited 2, 3, 4, 5, and 11 minutes for their drinks. Find the mean and the MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Full Data Summary: For the 5 scores {12, 15, 15, 18, 20}, find the mean, median, mode, range, IQR, and MAD.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

SUMMATIVE QUIZ: 10 ITEMS × 10 PTS = 100

Unit 9 Mastery Quiz: Statistical Measures & Data Displays

Directions: Show all paper steps in each box (+6 pts work, +4 pts answer). Name: _____ Date: _____ Score: ____ / 100

ASSESSMENT BREAKDOWN: #1–#6 CORE FLUENCY (60 PTS) • #7–#9 REAL-LIFE APPLICATIONS (30 PTS) • #10 ERROR ANALYSIS (10 PTS)

Standards Assessed: CCSS 6.SP.A.1–3, 6.SP.B.4–5 • TEKS 6.12A–D, 6.13A • FL MA.6.DP.1.1–6 • MathCounts & TMSCA Data Analysis, Mean, Median, IQR & MAD

1 CORE FLUENCY (SEC 9.1) • 10 PTS

Find the mean, median, and mode of the quiz scores: 14, 18, 20, 18, 25.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

2 CORE FLUENCY (SEC 9.2) • 10 PTS

Find the median and range of the ordered dataset: 8, 12, 15, 19, 22, 26.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

3 CORE FLUENCY (SEC 9.3) • 10 PTS

For the ordered data 4, 6, 8, 10, 12, 16, 20, find Q_1, the median, Q_3, and the interquartile range (IQR).

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

4 CORE FLUENCY (SEC 9.3) • 10 PTS

Compute the Mean Absolute Deviation (MAD) of the dataset: 6, 8, 10, 16.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

5 CORE FLUENCY (SEC 9.4) • 10 PTS

A box plot has minimum 12, $Q_1 = 18$, median $= 24$, $Q_3 = 31$, and maximum 40. What percent of the data lies between 18 and 31, and what is the IQR?

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

6 CORE FLUENCY (SEC 9.1) • 10 PTS

After 4 games, Mia's mean score is 15 points. How many points must she score in Game 5 to raise her 5-game mean to 17?

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

7 REAL LIFE (SEC 9.2) • 10 PTS

Five house prices on a block (in $1,000s) are 220, 230, 240, 250, and 960. Find the mean and median, and state which better represents a typical house.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

8 REAL LIFE (SEC 9.3) • 10 PTS

Battery life tests (in hours) for Brand A have IQR = 1.5 hr and Brand B have IQR = 4.8 hr. Which brand is more consistent?

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

9 REAL LIFE (SEC 9.4) • 10 PTS

In a histogram of 40 hikers, 12 hiked 0–2 mi, 18 hiked 3–5 mi, and 10 hiked 6–8 mi. What percent of hikers walked 3 miles or more?

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

10 ERROR ANALYSIS (SEC 9.2) • 10 PTS

To find the median of 15, 8, 22, 10, 19, Ben picked the middle number as written and said 22. Explain his error and find the true median.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

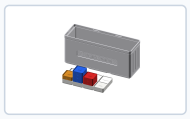
Unit 9: Statistical Measures & Data Displays — Practice A & B Complete Key

Big Ideas Math Grade 6 — Chapters 9 & 10 (Statistical Measures and Data Displays) • Concept → Blocks (When Applicable: Place Value Blocks & Fraction Strips) → Calculator

1. Concept (Stack Approach): Statistical summaries condense a list of numbers into measures of center (Mean, Median) and spread (IQR, MAD) by accumulating data into dedicated statistical registers.

2. Blocks (Place Value & Fraction): Level unequal Place Value digit stacks to model the Mean as a fair share, and use 4 equal Fraction Strips to visualize 25% quartiles.

3. Calculator (SC-6): Clear with [g][CLΣ], enter data once with [Σ+] (or [FRQ]), and read [g][x-bar], [f][MED], [g][MODE], [RNG], [f][1Q], [g][3Q], [IQR], and [g][MAD].



SEC 9.1 (pp.86-87): STATISTICAL QUESTIONS, DOT PLOTS, AND THE MEAN

Methods: W1: Mean Formula (Sum ÷ Count) | W2: Fair-Share Block Leveling | W3: Balance Point Deviations

PRACTICE A (p.86): KEY IDEAS (#1-#10) — ExA: Sum = 105, Count = 5, Mean = 21

A1: Sum = 20, Mean = 5 (Mean(2, 4, 6, 8))
Check: [g][CLΣ] 2 [Σ+] 4 [Σ+] 6 [Σ+] 8 [Σ+] [g][x-bar]

A2: Sum = 70, Mean = 14 (Sort/Load 5 values → Stats)
Check: Load 5 nums into [Σ+] → [g][x-bar]

A3: 156 cm (Mean(150, 162, 156))
Check: 150 [Σ+] 162 [Σ+] 156 [Σ+] [g][x-bar]

A4: Mean = 4.0 g (Load data → Stats)
Check: Load into [Σ+] → [g][x-bar]

A5: Sum = 55, Mean = 18.33 (Mean(10, 20, 25))
Check: [g][CLΣ] 10 [Σ+] 20 [Σ+] 25 [Σ+] [g][x-bar]

A6: 13.33 (80 ÷ 6) (Mean(10, 4, 20, 2))
Check: 10 [ENT] 4 [FRQ] 20 [ENT] 2 [FRQ] [g][x-bar]

A7: 70°F (Sort/Load 6 values → Stats)
Check: Load 6 temps into [Σ+] → [g][x-bar]

A8: 60 total blocks (5 × 12)
Check: 5 [ENT] 12 [×]

A9: 95 (360 - 265)
Check: 360 [ENT] 265 [-]

A10: 17 points ((90 + 29) ÷ 7)
Check: 90 [ENT] 29 [+] 7 [÷]

PRACTICE B (p.87): REAL LIFE (#1-#10) — ExB: 94

B1: Sum = 85; Mean = 17 points (Mean(14, 18, 12, 22, 19))
Check: [g][CLΣ] 14 [Σ+] 18 [Σ+] 12 [Σ+] 22 [Σ+] 19 [Σ+] [g][x-bar]

B2: 42 grams (Mean(41, 43, 42, 40, 44, 42))
Check: [g][CLΣ] 41 [Σ+] 43 [Σ+] 42 [Σ+] 40 [Σ+] 44 [Σ+] 42 [Σ+] [g][x-bar]

B3: 89 ÷ 10 = 8.9 ((((3 × 8) + (5 × 9)) + (2 × 10)) ÷ 10)
Check: 3 [ENT] 8 [×] 5 [ENT] 9 [×] [+] 2 [ENT] 10 [×] [+] 10 [÷]

B4: 91 ((5 × 85) - (((80 + 88) + 82) + 84))
Check: 5 [ENT] 85 [×] 80 [ENT] 88 [+] 82 [+] 84 [+] [-]

B5: Total = 36,000; Mean = 9,000 steps
Check: 8200 [ENT] 9500 [+] 7800 [+] 10500 [+] 4 [÷]

B6: 82.5 → 90.0 (+7.5 points) (((88 + 92) + 90) ÷ 3)
Check: 88 [ENT] 92 [+] 90 [+] 3 [÷]

B7: 12 books per stack ((((6 + 10) + 14) + 18) ÷ 4)
Check: 6 [ENT] 10 [+] 14 [+] 18 [+] 4 [÷]

B8: 4.8 g (((((4.2 + 5.1) + 4.8) + 5.5) + 4.4) ÷ 5)
Check: 4.2 [ENT] 5.1 [+] 4.8 [+] 5.5 [+] 4.4 [+] 5 [÷]

B9: Reading time varies from student to student (60 × 1)
Check: 60 [ENT] 1 [×]

B10: 260 ÷ 10 = 26 points ((80 + 180) ÷ 10)
Check: 80 [ENT] 180 [+] 10 [÷]

SEC 9.2 (pp.88-89): MEASURES OF CENTER: MEDIAN, MODE, AND RANGE

Methods: W1: Ordered List (Least to Greatest) | W2: Dot Plot / Frequency Table Analysis

PRACTICE A (p.88): KEY IDEAS (#1-#10) — ExA: Mean = 7.875, Median = 7.5, Mode = 7, Range = 4

A1: Mode = 7 (Sort/Load 8 values → Mode)
Check: Load 8 nums → [g][MODE]

A2: Median = 14, Mode = 12, Range = 8
Check: Load 6 nums → [f][MED], [g][MODE], [RNG]

A3: Mean = 9, Median = 8, Mode = 8, Range = 9
Check: Load 5 nums into [Σ+]

A4: Min = 62°F, Max = 85°F, Range = 23°F
Check: Load 7 nums → [f][MIN], [g][MAX], [RNG]

A5: 75°F (Sort/Load 6 values → Med)
Check: Load 6 nums → [f][MED]

A6: Mean = $29.17, Median = $17.50 (Median is best)
Check: Load 6 nums → [g][x-bar], [f][MED]

A7: Mean increases from 14 to 30.8; Median stays 14
Check: Mental / Table Check

A8: 95 (64 + 31)
Check: 64 [ENT] 31 [+]

A9: Median = 14, Range = 13 (Sorted: 8, 11, 14, 16, 21)
Check: Mental / Table Check

A10: Mean = $370k, Median = $220k (Use Median due to the $980k outlier)
Check: Load 5 nums → [g][x-bar], [f][MED]

PRACTICE B (p.89): REAL LIFE (#1-#10) — ExB: Mean = $29.17, Median = $17.50, Mode = $15 (Median is best)

B1: Median = 62, Mode = 62, Range = 22
Check: [g][CLΣ] 55 [Σ+] 62 [Σ+] 48 [Σ+] 70 [Σ+] 62 [Σ+] 50 [Σ+] 66 [Σ+] [f][MED] [g][MODE] [RNG]

B2: Median = 12.5, Mode = 12, Range = 5
Check: [g][CLΣ] 11 [Σ+] 13 [Σ+] 12 [Σ+] 14 [Σ+] 12 [Σ+] 16 [Σ+] [f][MED]

B3: Mean=$40, Med=$25, Mode=$20; Median (outlier $105 skews mean)
Check: [g][CLΣ] 20 [Σ+] 25 [Σ+] 20 [Σ+] 30 [Σ+] 105 [Σ+] [g][x-bar] [f][MED]

B4: Modes = 6 and 8 (bimodal); Median = 7 (8)
Check: 6 [ENT] 8

B5: Median = 11.8 s, Range = 1.2 s, No mode (12.4 - 11.2)
Check: 12.4 [ENT] 11.2 [-]

B6: Min = 64, Max = 81, Range = 17°F, Median = 72°F
Check: [g][CLΣ] 72 [Σ+] 68 [Σ+] 75 [Σ+] 81 [Σ+] 64 [Σ+] 70 [Σ+] 74 [Σ+] [f][MED] [RNG]

B7: Mean = 11, Median = 11, Mode = 12, Range = 7
Check: [g][CLΣ] 8 [Σ+] 12 [Σ+] 9 [Σ+] 15 [Σ+] 12 [Σ+] 10 [Σ+] [g][x-bar] [f][MED] [g][MODE] [RNG]

B8: Example: 8, 8, 10, 12, 15 (15 - 8)
Check: 15 [ENT] 8 [-]

B9: Median increases by 5 (to 85); Range stays 20 (95 - 75)
Check: 95 [ENT] 75 [-]

B10: Mean = 11.75, Median = 11.5, Mode = 10, Range = 6
Check: [g][CLΣ] 9 [Σ+] 12 [Σ+] 10 [Σ+] 14 [Σ+] 11 [Σ+] 15 [Σ+] 10 [Σ+] 13 [Σ+] [g][x-bar] [f][MED]

SEC 9.3 (pp.90-91): QUARTILES, INTERQUARTILE RANGE (IQR) & BOX PLOTS

Methods: W1: Split Ordered Data into Lower & Upper Halves | W2: Box-and-Whisker Plot & 25% Quartile Sections

PRACTICE A (p.90): KEY IDEAS (#1-#10) — ExA: Min = 68, Q1 = 73.5, Med = 82, Q3 = 90, Max = 96; IQR = 16.5

A1: Min = 10, Q1 = 15, Med = 30, Q3 = 45, Max = 50, IQR = 30
Check: Load 5 nums → [f][1Q], [g][3Q], [IQR]

A2: Q1 = 6, Med = 10, Q3 = 14, IQR = 8
Check: Load 7 nums → [f][1Q], [g][3Q], [IQR]

A3: 34 (58 - 24)
Check: 58 [ENT] 24 [-]

A4: 75% (3 quarters = 3 × 25%)
Check: Mental / Table Check

A5: Q1 = 73.5, Med = 82, Q3 = 90, IQR = 16.5
Check: Load 8 nums into [Σ+]

A6: Q1 = 46.5, Med = 51, Q3 = 56.5, IQR = 10
Check: Load 8 nums into [Σ+]

A7: Player A (smaller IQR means the middle 50% of scores are closer together)
Check: Mental / Table Check

A8: 90 (Any score > 90 is an outlier) (60 + (1.5 × 20))
Check: 60 [ENT] 1.5 [ENT] 20 [×] [+]

A9: Q1 = 15, Med = 22, Q3 = 28, IQR = 13
Check: Load 7 nums → [IQR]

A10: About 100 students (50% of 200) (50% of 200)
Check: 200 [ENT] 50 [%]

PRACTICE B (p.91): REAL LIFE (#1-#10) — ExB: IQR = 16; 20 students (50%)

B1: Min=40, Q_1=45, Med=55, Q_3=65, Max=70; IQR = 20
Check: [g][CLΣ] 40 [Σ+] 45 [Σ+] 50 [Σ+] 55 [Σ+] 60 [Σ+] 65 [Σ+] 70 [Σ+] [IQR]

B2: Q_1 = 7.5, Med = 10, Q_3 = 13, IQR = 5.5
Check: [g][CLΣ] 6 [Σ+] 7 [Σ+] 8 [Σ+] 9 [Σ+] 11 [Σ+] 12 [Σ+] 14 [Σ+] 15 [Σ+] [IQR]

B3: Q_1 = 22.5, Med = 30, Q_3 = 42.5, IQR = 20
Check: [g][CLΣ] 30 [Σ+] 15 [Σ+] 45 [Σ+] 25 [Σ+] 35 [Σ+] 20 [Σ+] 50 [Σ+] 40 [Σ+] 30 [Σ+] [IQR]

B4: Range = 28 ft; IQR = 13 ft (31 - 18)
Check: 40 [ENT] 12 [-] 31 [ENT] 18 [-]

B5: 75% = 45 trees (75% of 60)
Check: 60 [ENT] 75 [%]

B6: 25% of 60 = 15 trees (25% of 60)
Check: 60 [ENT] 25 [%]

B7: Class A (smaller IQR means less spread in the middle 50%)
Check: 19 [ENT] 8 [-]

B8: 30 + 15 = 45 (30 + (1.5 × 10))
Check: 30 [ENT] 1.5 [ENT] 10 [×] [+]

B9: Min=18, Q_1=22, Med=27, Q_3=34, Max=40; IQR = 12
Check: [g][CLΣ] 18 [Σ+] 22 [Σ+] 25 [Σ+] 29 [Σ+] 34 [Σ+] 40 [Σ+] [IQR]

B10: Range = 90, IQR = 8 (IQR is not distorted by the outlier 100)
Check: [g][CLΣ] 10 [Σ+] 12 [Σ+] 14 [Σ+] 16 [Σ+] 18 [Σ+] 20 [Σ+] 100 [Σ+] [IQR]

SEC 9.4 (pp.92-93): MEAN ABSOLUTE DEVIATION (MAD)

Methods: W1: 3-Step MAD Distance Table | W2: Number-Line Deviation Balance

PRACTICE A (p.92): KEY IDEAS (#1-#10) — ExA: Mean = 14, MAD = 2.4

A1: Mean = 156 cm, MAD = 4.0 cm (MAD(150, 162, 156))
Check: 150 [Σ+] 162 [Σ+] 156 [Σ+] [g][MAD]

A2: Mean = 14, MAD = 2.4 (Sort/Load 5 values → Mean/MAD)
Check: Load 5 nums → [g][x-bar], [g][MAD]

A3: Mean = 20, MAD = 6.0 (Sort/Load 5 values → Mean/MAD)
Check: Load 5 nums → [g][x-bar], [g][MAD]

A4: Mean = 7, MAD = 0 (Zero spread) (All distances from 7 are 0)
Check: Mental / Table Check

A5: Mean = 28, MAD = 4.8 (Sort/Load 5 values → Mean/MAD)
Check: Load 5 nums → [g][x-bar], [g][MAD]

A6: Mean = 13.0 s, MAD = 0.40 s (Sort/Load 6 values → Mean/MAD)
Check: Load 6 decimals → [g][x-bar], [g][MAD]

A7: Mean = 88, MAD = 3.6 (Sort/Load 5 values → Mean/MAD)
Check: Load 5 nums → [g][x-bar], [g][MAD]

A8: Team B (a larger MAD indicates greater variation from the mean)
Check: Mental / Table Check

A9: Mean = 10; deviations: 4, 0, 1, 3; MAD = 2.0
Check: Mental / Table Check

A10: Mean = 9, Med = 8, Mode = 8, Range = 9, IQR = 5.5, MAD = 2.4
Check: Mental / Table Check

PRACTICE B (p.93): REAL LIFE (#1-#10) — ExB: Mean = 13.0 s; MAD = 0.40 s

B1: Mean = 210°C; MAD = 3.0°C (MAD(206, 208, 212, 214))
Check: [g][CLΣ] 206 [Σ+] 208 [Σ+] 212 [Σ+] 214 [Σ+] [g][MAD]

B2: Mean = 10; MAD = 1.6 shots (Mean/MAD(7, 9, 10, 11, 13))
Check: [g][CLΣ] 7 [Σ+] 9 [Σ+] 10 [Σ+] 11 [Σ+] 13 [Σ+] [g][x-bar] [g][MAD]

B3: Mean = 50 g, MAD = 0 g (no deviation from the mean) (0)
Check: 0 [ENT]

B4: Mean = 9 s, MAD = 2.0 s; Raven A is more consistent
Check: [g][CLΣ] 6 [Σ+] 8 [Σ+] 10 [Σ+] 12 [Σ+] [g][MAD]

B5: Mean = 85; MAD = 4.8 (Mean/MAD(76, 82, 85, 88, 94))
Check: [g][CLΣ] 76 [Σ+] 82 [Σ+] 85 [Σ+] 88 [Σ+] 94 [Σ+] [g][x-bar] [g][MAD]

B6: Mean = 15 m, MAD = 1.0 m (Mean/MAD(15, 16, 14, 15, 17, 13))
Check: [g][CLΣ] 15 [Σ+] 16 [Σ+] 14 [Σ+] 15 [Σ+] 17 [Σ+] 13 [Σ+] [g][x-bar] [g][MAD]

B7: Mean = 85°F; deviations 5, 1, 1, 5; MAD = 3.0°F
Check: [g][CLΣ] 80 [Σ+] 84 [Σ+] 86 [Σ+] 90 [Σ+] [g][MAD]

B8: The signed deviations (-5 + 0 + 5) always add to 0 (-5 + 5)
Check: 5 [+/-] [ENT] 5 [+]

B9: Mean = 5 min; MAD = 2.4 min (Mean/MAD(2, 3, 4, 5, 11))
Check: [g][CLΣ] 2 [Σ+] 3 [Σ+] 4 [Σ+] 5 [Σ+] 11 [Σ+] [g][x-bar] [g][MAD]

B10: Mean=16, Med=15, Mode=15, Rng=8, IQR=5.5, MAD=2.4
Check: [g][CLΣ] 12 [Σ+] 15 [Σ+] 15 [Σ+] 18 [Σ+] 20 [Σ+] [g][x-bar] [f][MED] [g][MODE] [RNG] [IQR] [g][MAD]

UNIT 09 MASTERY QUIZ KEY (p.120 • TEKS 6.12A–D, 6.13A): Q1: Mean=19, Med=18, Mode=18 Q2: Median = 17, Range = 18 Q3: Q_1=6, Med=10, Q_3=16, IQR=10 Q4: Mean = 10, MAD = 3 Q5: 50%; IQR = 13

Quiz Q6–Q10 Answers: Q6: 25 points Q7: Mean=380, Med=240 (Median) Q8: Brand A (smaller IQR) Q9: 70% (28 / 40) Q10: Sort first (8,10,15,19,22): 15