

UM PRINTABLES - GRADE 6 MATH

Mean Absolute Deviation Discovery Lab

*Why Variability Matters**A Hands-On Investigation into 6.SP.B.5c*

DISCOVERY LAB

WORKSHEET + KEYS

QUIZ + EXIT TICKETS

A focused, hands-on discovery lab that reverses the usual order: students FIRST experience why the mean alone is not enough, THEN build the Mean Absolute Deviation (MAD) procedure for themselves through guided, step-by-step calculation. Includes teacher lesson script, 5-problem worksheet with full solutions, 8 real-world dataset analysis cards, anchor charts, vocabulary foldable, 4 exit tickets, 10-question quiz with answer key, and a CCSS alignment chart.

CCSS 6.SP.B.5c - Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation)

PRINTABLES
www.umprintables.com

Two basketball teams each played 4 games. Their scores are:

Team A	Team B
4, 5, 6, 5	1, 5, 5, 9

Step 1: Calculate the mean of each team.

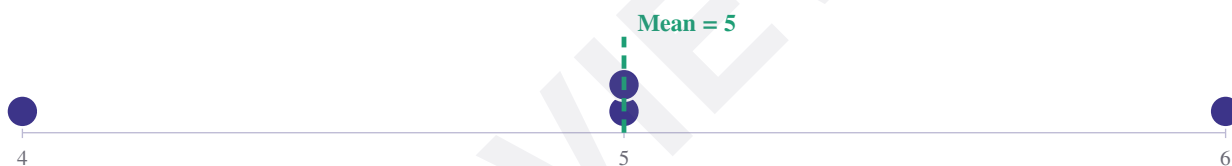
Mean of Team A = (____ + ____ + ____ + ____) / 4 = ____

Mean of Team B = (____ + ____ + ____ + ____) / 4 = ____

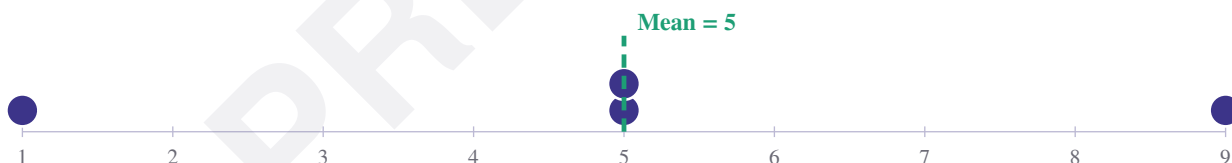
What do you notice about the two means?

Step 2: Make a dot plot of each team's scores.

Team A: {4, 5, 6, 5}



Team B: {1, 5, 5, 9}



Step 3: Compare the two dot plots.

Which team's scores are more **clustered** (closer together)? ____

Which team's scores are more **spread out**? ____

Even though both teams have the same mean, are they really the "same"? Explain.

Step 4: Invent a variability measure.

Come up with a number that tells us **how spread out** each team's scores are. There is no "right" answer yet - you are the mathematician inventing the measure!

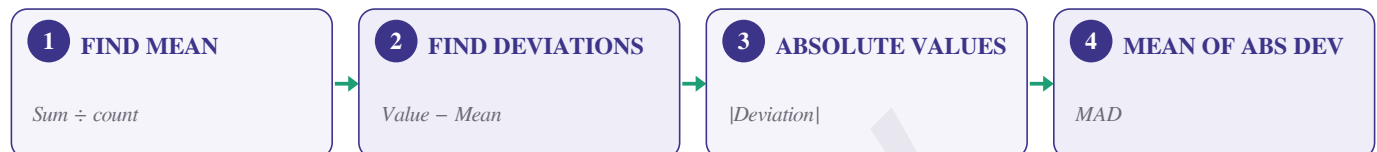
My variability measure for Team A: ____ How I calculated it:

My variability measure for Team B: ____ How I calculated it:

PART 2 - STEP-BY-STEP MAD LAB

Guided Worksheet - 5 Problems

Now that you have discovered **why** we need a measure of variability, it is time to learn **how** to calculate one. The Mean Absolute Deviation (MAD) is found using a four-step procedure. Each problem below walks you through all four steps. Show your work in the tables provided. After completing each problem, trade papers with a peer and verify each other's arithmetic step by step.



Problem 1. Maria recorded the number of pages she read each day for 5 days.

Dataset: { 4, 6, 8, 10, 12 } **Number of values (n):** 5

Step 1 - Find the Mean: Sum of all values = _____ Mean = Sum ÷ n = _____

Value	4				
Step 2: Deviation (value - mean)	-4	-2	0	+2	+4
Step 3: Deviation 	4	2	0	2	4
Step 4: Sum of Dev 	12				
MAD = Sum ÷ n	12 ÷ 5 = 2.4				

Final Answer: MAD = 2.4

Interpret: On average, Maria's daily reading varied by 2.4 pages from the mean of 8 pages.

Verify: Trade papers with a partner. Does your partner's hand-calculated MAD match your MAD of **2.4**? Circle one: YES / NO

PART 3 - REAL-WORLD APPLICATION

8 Dataset Analysis Cards

Now apply your MAD skills to real datasets. For each card, calculate the mean and MAD by hand. Then write a **3-sentence summary** that uses BOTH the mean and the MAD to describe what the data tells you. Use the sentence frames below if you need help getting started.

SENTENCE FRAMES FOR YOUR 3-SENTENCE SUMMARY

1. The **mean** of this dataset is _____, which represents *[what the average tells us in context]*.
2. The **MAD** is _____, which means the data values vary by an average of _____ from the mean - this tells us the data is *[highly consistent / moderately variable / highly variable]*.
3. Together, the mean and MAD show that *[interpretation in context: e.g., "the player is a consistent scorer," "the temperatures fluctuate widely," "the test scores are tightly clustered"]*.

CARD 1. Basketball Player Heights (inches)

A youth basketball coach recorded the heights of 5 starting players.

Dataset: { 70, 72, 74, 76, 78 } **n = 5**

Your Turn - Calculate:

Mean = _____ ÷ _____ = _____

Deviations (Value – Mean): _____

|Deviations|: _____

Sum of |Deviations| = _____ MAD = _____ ÷ _____ = _____

Your 3-Sentence Summary:

1. _____
2. _____
3. _____

ANSWER: Mean = 74, MAD = 2.4. The players' heights averaged 74 inches (6'2") with a MAD of 2.4 inches, meaning heights varied by an average of 2.4 inches from the mean - a fairly consistent team.

WHAT'S INSIDE

Mean Absolute Deviation (MAD) Discovery Lab

Grade 6 • CCSS 6.SP.B.5c • 35-Page Resource

A discovery-first sequence that has students examine why variability matters, learn the four-step MAD procedure, apply it to guided and context-based data, and check understanding through formative and summative assessment.

01 Teacher Guide & Pacing

pp. 2–3

Teacher notes, a suggested 6-day pacing guide, materials, differentiation tips, and assessment overview.

02 CCSS 6.SP.B.5c Alignment

p. 4

A standards-alignment chart connecting the resource components to the Mean Absolute Deviation focus of 6.SP.B.5c.

03 “Why MAD?” Discovery

pp. 5–7

Teacher lesson script, student discovery handout, dot-plot comparison, reflection, teacher key, misconceptions, and debrief prompts.

04 Vocabulary + Practice

pp. 8–9

A six-term vocabulary foldable plus vocabulary quick check and a visual variability practice activity.

05 Anchor Charts

pp. 10–11

Two display-ready visuals: “Why Variability Matters” and “MAD Calculation Steps.”

06 Step-by-Step MAD Lab

pp. 12–14

Five guided worksheet problems using the four-step procedure: mean, deviations, absolute values, and MAD.

07 Worksheet Answer Key

pp. 15–17

Detailed teacher solutions for all five guided MAD problems.

08 Google Sheets Calculator

pp. 18–19

Build instructions and reference spreadsheet layout for calculating mean, deviations, absolute deviations, and MAD.

09 Real-World Dataset Cards

pp. 20–25

Eight context-based datasets with spaces to calculate mean and MAD and write three-sentence interpretations, plus teacher solutions.

10 Exit Tickets + Reflection

pp. 26–29

Four quick formative checks, student self-assessment, teacher reflection prompts, and an answer key.

11 Quiz + Extensions

pp. 30–32

A 10-question summative quiz, student work space, and optional challenge problems.

12 Quiz Answer Key + Closing

pp. 33–35

Detailed quiz solutions, optional challenge solutions, and the final UM Printables review/thank-you page.

35

PAGES

12

SECTIONS

6.SP.B.5c

CCSS FOCUS