

Algebra 1
Mean, Median, and Mode

Mean, Median, and Mode | A1-U10-P01

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for count, middle position(s), middle value(s), median, and unit, weighted total, count, exact mean, and unit, chosen measure, data-based evidence, and purpose-based justification, construction or impossibility proof with sum, rank, and frequency verification, identified misconception, corrected computation, and corrected claim and before/after totals, counts, mean, median, modes, and change classification.

8 PDFs and a README; 71 buyer pages.

Algebra 1

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and Mode

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Use the exact frequency table of points to calculate the mean. Count repeated observations rather than averaging only the distinct values. All frequencies are one. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
2	1
5	1
8	1

Bank label: _____

Find the mean of the points data represented by the table, and show the weighted total and total count that justify it. The four observations total 24. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
4	1
6	2
8	1

Bank label: _____

Use the exact frequency table of books to calculate the mean. Count repeated observations rather than averaging only the distinct values. There are three observations, not two. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
3	2
7	1

Bank label: _____

Compute the exact mean from this value-frequency table and report it in degrees. Include every value-times-frequency contribution. Opposite contributions cancel. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
-2	1
0	1
2	1

Bank label: _____

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Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Determine the median of the exact account units frequency table. First order values and use the total count to locate the middle position or positions. The middle values straddle zero.

value	frequency
-7	1
-1	2
3	2
8	1

Determine the median of the exact dollars frequency table. First order values and use the total count to locate the middle position or positions. The most frequent value alone does not determine an even-sample median.

value	frequency
100	4
2	5
3	1

Determine the median of the exact seconds frequency table. First order values and use the total count to locate the middle position or positions. Keep hundredths exact while ordering.

value	frequency
$\frac{101}{100}$	2
$\frac{99}{100}$	1
$\frac{21}{20}$	2
1	1

Determine the median of the exact points frequency table. First order values and use the total count to locate the middle position or positions. For fourteen observations, positions 7 and 8 must be traced through sorted cumulative counts.

value	frequency
7	6
1	3
4	1
10	4

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Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: count: 7; median: 3; middle positions: 4; middle values: 3; unit: points

Determine the median of the exact hours frequency table. First order values and use the total count to locate the middle position or positions. The fourth and fifth positions fall in the same value row. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
1	3
8	2
4	3

Your response: _____

Incoming: count: 3; median: 0; middle positions: 2; middle values: 0; unit: degrees

Determine the median of the exact meters frequency table. First order values and use the total count to locate the middle position or positions. Exact decimal order is 1.5, 2.5, 3.5. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
$\frac{5}{2}$	1
$\frac{3}{2}$	1
$\frac{7}{2}$	1

Your response: _____

Incoming: count: 15; mean: $\frac{23}{15}$; unit: errors; weighted total: 23

Compute the exact mean from this value-frequency table and report it in elevation units. Include every value-times-frequency contribution. Deviation arithmetic around -100 must restore the negative baseline. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
-102	2
-100	5
-93	1

Your response: _____

Incoming: count: 13; mean: $\frac{13008}{13}$; unit: grams; weighted total: 13008

Use the exact frequency table of meters to calculate the mean. Count repeated observations rather than averaging only the distinct values. Exact cancellation is easier in fourths. Use the complete requested calculation as the matching response: total/count/mean, ordered middle positions and median, or target total and missing value as applicable. Keep the original units and feasibility checks.

value	frequency
$-\frac{7}{4}$	4
$\frac{1}{2}$	3
$\frac{9}{4}$	2

Your response: _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Mode convention: no mode when all distinct or all observed frequencies tie The ordered-data summary begins from 2, 3, 4, 5, 6 points. Apply this edit: add 20. Recompute the mean, median, and mode set, then state exactly which summaries change. The new extreme affects the total and even-sample middle positions. Compare the complete before-and-after center summaries under the original edit. Explain which mean, median and mode statements change and which remain true, using totals, ordered ranks and frequencies separately.

The ordered-data summary begins from 2, 4, 4, 6, 10 minutes. Apply this edit: remove one occurrence of 10. Recompute the mean, median, and mode set, then state exactly which summaries change. Remove only the single largest observation. Compare the complete before-and-after center summaries under the original edit. Explain which mean, median and mode statements change and which remain true, using totals, ordered ranks and frequencies separately.

Mode convention: no mode when all distinct or all observed frequencies tie The ordered-data summary begins from 1, 2, 3, 4, 5 points. Apply this edit: replace one 1 with 5. Recompute the mean, median, and mode set, then state exactly which summaries change. The replacement changes frequency and total while the middle position stays central. Compare the complete before-and-after center summaries under the original edit. Explain which mean, median and mode statements change and which remain true, using totals, ordered ranks and frequencies separately.

Mode convention: no mode when all distinct or all observed frequencies tie The ordered-data summary begins from 2, 4, 6, 8, 10, 12 points. Apply this edit: add 0. Recompute the mean, median, and mode set, then state exactly which summaries change. The sample changes from even to odd. Compare the complete before-and-after center summaries under the original edit. Explain which mean, median and mode statements change and which remain true, using totals, ordered ranks and frequencies separately.

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Full Worked Solutions - excerpt

Worked example

Problem. Order the values before selecting a middle position. Data: 9, 1, 8, 2, 3. A student claims: The median is the displayed middle entry, 8. Diagnose the exact mistake and replace the claim with a correct central-summary statement.

Answer. correction: the median is 3.; diagnosis: the middle entry was selected before sorting

Explanation and check.

The ordered data are 1, 2, 3, 8, 9, whose third value is 3. Therefore the median is 3.

Worked example

Problem. Inspect every value tied at the greatest frequency. Data: 2, 2, 5, 5, 8. A student claims: The mode is 2. Diagnose the exact mistake and replace the claim with a correct central-summary statement.

Answer. correction: the mode set is $\{2, 5\}$.; diagnosis: a second value tied for greatest frequency was omitted

Explanation and check.

Both 2 and 5 occur twice, while 8 occurs once. Therefore the mode set is $\{2, 5\}$.