Standards Analysis Whole-Class Instruction: What standards warrant more time for whole-class instruction, re-teaching and review?	Analysis of Why Students Did Not Learn the Standard	Instructional Plan—What Techniques Will You Use to Address These Standards
#33 Students Answering Correctly: 21% MA.8.AR.1.2: Apply properties of operations to multiply two linear expressions with rational coefficients.	- partial distribution - format of what is being distributed at the end and not at the beginning - vocabulary: equivalent - don't understand distribution - don't understand like-terms - inefficient strategies - stamina issue	- reteach distributive property (draw rollercoaster) - use of vocabulary in daily life - exposure to vocabulary and content - spiral review on classroom assessments; use as bellringers - change the order
#24 Students Answering Correctly: 22% MA.8.NSO.1.5: Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency.	- lack of understanding laws of exponents - multiply each group and then try to divide - misuse of calculator - format of question	- practice with a digital platform - teaching correct use of calculator - teaching laws of exponents and scientific notation - clarifying between different methods (add and subtract, multiplication and divide) - exposure
#6 Students Answering Correctly: 25% MA.8.GR.1.1: Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles.	- confusing slant height with height - trying to get area - not using the correct formula (area and Pythagorean Theorem) - using the 8 instead of breaking down and using 4	- exposure, more examples similar - take time to analyze the pictures - have students make a plan to solve, what pieces of information do we need to solve, what do you not need

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#7 Students Answering Correctly: 25% MA.8.NSO.1.7: Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals.	- didn't understand the order of operations - didn't understand the laws of exponents - incorrect use of calculator	- using colors to highlight steps of the process for the order of operations - teaching use of calculator
#8 Students Answering Correctly: 25% MA.8.AR.1.1: Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases.	- not knowing invisible math (no operation symbol or parenthesis) - unfamiliar with vocabulary - content falls towards the end of the textbook/pacing guide	- purposefully give them problems without exponents; write a 1 as the exponent - vocabulary term degree - expanding to include all invisible math (multiplication sign, etc.) - spiral/introduce concepts throughout the year/mini-lessons
#26 Students Answering Correctly: 26% MA.8.AR.3.2: Given a table, graph or written description of a linear relationship, determine the slope.	- incorrect use of formula - don't remember horizontal and vertical - aren't consistent with x, y, x_1, x_2, y_1, and y_2 labels - not using reference sheet - mixing up "x" and "y" - incorrect placement of x and y - negative number patterns	- highlight x_1 and y_1 same color and x_2 and y_2 same color - teach to label the add/subtract pattern on the table - using reference sheet throughout the year - recognizing when to use the reference sheet - practice with horizontal tables - teach to turn into order pairs - teach plotting points as a strategy

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#29 Students Answering Correctly: 26% MA.8.AR.2.3: Given an equation in the form of x^2=p and x^3=q, where p is a whole number and q is an integer, determine the real solutions.	- don't know how to use/find cubed root on calculator - don't understand concept of cubed roots - ability to select equivalent expressions ("select all that apply") - misinterpreting cubes and squares - choosing -4 because 4 is answer	- relate x^2 to $\sqrt[2]{}$ and x^3 and $\sqrt[3]{}$ - work backwards strategies - review perfect squares/cubes - operation of exponents (rewrite multiple factors) - read directions carefully - practice with calculators
#30 Students Answering Correctly: 27% MA.8.GR.2.4: Solve mathematical and real-world problems involving proportional relationships between similar triangles.	- not seeing the 2 triangles - not understanding how to set up the proportions - not answering the question being asked (finding wrong side) - vocabulary: proportions, scale factor, similar, corresponding sides - not understanding line notation - confusion with decimals - misuse of calculator	- practice with redrawing and labeling the figure - practice setting up proportions - understanding reasonable answers - create cutouts of triangles and have students label the individual triangles and then put them together for a hands-on activity - putting shapes on test
#28 Students Answering Correctly: 28% MA.8.GR.1.3: Use the Triangle Inequality Theorem to determine if a triangle can be formed form a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.	- incorrect answer format (not reading directions) - taught at beginning of year and not brought up in any future chapters - not understanding the question or Triangle Inequality Theorem - misunderstanding on how to answer (ex.: number vs. inequality) - students might "guess" correctly by (+) or (-) 15 and 3	- skill review - format practice - understanding what goes in the box - different approaches to evaluating this theorem - give problems asking for inequalities - give problems asking for possibilities for missing side - visuals and hands-on opportunities (pipe cleaners, straws, etc.) - use compass to build triangles with various lengths - over exposure of shapes

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#35 Students Answering Correctly: 31% MA.8.AR.2.2: Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically.	- calculator misuse - not knowing how to undo addition and multiplication - fractions	- teaching correct use of calculator - use of algebra tiles and equations mat with whole numbers - over exposure to problems with fractions - practice with "undoing" all operations
#4 Students Answering Correctly: 32% MA.8.NSO.1.2: Plot, order and compare rational and irrational numbers, represented in various forms.	- basic understandings of square roots, cube roots, pie, rational numbers, irrational numbers - understanding how to simplify - like terms/same format - how to find values on calculator - comparing decimals	- calculator usage - number line review - label the answers found for each number so that they can order least to greatest - review decimal, rounding, place value, comparing - cube root not divided by 3
#13 Students Answering Correctly: 32% MA.8.DP.2.2: Find the theoretical probability of an event related to a repeated experiment.	- understanding "a fair coin" - vocabulary of probability - not setting up a sample space or tree diagram, etc. - lack of experience and exposure - unable to convert results to recording - vocabulary: probability, # of sides, outcomes	- teach test vocabulary - practice with coins as manipulatives - conduct experiments and make sample spaces - practice recording in tables, lists, and trees

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#2 Students Answering Correctly: 35% MA.8.GR.1.3: Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.	- misunderstanding types of triangles - misunderstanding characteristics of each triangle to qualify as right. - not knowing to apply Triangle Inequality Theorem - incorrect use of the Pythagorean Theorem - H=longest side	- teach Triangle Inequality Theorem & Converse of - review types of triangles (acute, obtuse, right, equilateral, scalene, etc.) - practice Pythagorean Theorem
#11 Students Answering Correctly: 35% MA.8.NSO.1.2: Plot, order and compare rational and irrational numbers, represented in various forms.	- understanding the need to convert into the same form to compare - 2Л is 2·Л (understanding operations with Л) - answer choices use different symbols interchangeably for square and cube	- number line review - square/cube root concepts/calculator function - comparative review (<, >, =) - spiral - calculator practice

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#15 Students Answering Correctly: 36% MA.8.NSO.1.3: Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency.	- laws of exponents - vocabulary: reciprocal - relationship between negative exponents and fractions	- review laws of exponents - repetition with negative exponents - hands-on with whiteboards
#9 Students Answering Correctly: 38% MA.8.GR.2.1: Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship.	- not understanding how to answer the question - not matching degree rotation to direction rotation	- hands-on activities to visually show rotation - quadrant review - vocabulary/angle degrees representation/review

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#27 Students Answering Correctly: 38% MA.8.AR.2.3: Given an equation in the form of x^2=p and x^3=q, where p is a whole number and q is an integer, determine the real solutions.		
#32 Students Answering Correctly: 38% MA.8.AR.3.5: Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form.	- students know slope isn't total, so they guess between choices A & B	- review clues for y, m, x, b (per, each, fixed) - break down sentence into phrases