

Appendix A: Special Education Accommodations and Modifications

Kindergarten		
Unit 1		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Utilize rote strategies to encourage number name memorization Create anchor charts for names of shapes with/ in front of students. 	<ul style="list-style-type: none"> Marble Jar Number Chart 1-10 Ten Frame Cards 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Teaching Counting Guide Basic Facts Guide Number representations: An evidence-based math strategy with printable number puzzles Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 2		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Provide students a number line or chart to keep at their desk. Utilize literature to encourage number sense. 20 addition and subtraction books for little learners Teach addition and subtraction as processes of composition and decomposition using unifix cubes 	<ul style="list-style-type: none"> Number Chart 1-50 Number Comparison Scale Number Path Virtual Unifix Cubes 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Teaching Counting Guide Basic Facts Guide Counting strategies anchor chart Suggestions on disability

Note

- Digital versions of manipulatives linked as examples and for instances when hands on manipulatives are not available or practical to use.
- National Center on Intensive Intervention Guides contain instructional strategies, sample lessons, worksheets, and specific examples of corrective feedback for the most common student misconceptions.

		specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Create anchor charts for names of common units of measurement with/ in front of students 	<ul style="list-style-type: none"> Part, Part, Whole Virtual Manipulatives for measurement 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Teaching Counting Guide Basic Facts Guide Place Value Concepts Guide Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Relate The names of 3D shapes to real life items, using visuals Kindergarten 3D shapes in real life 	<ul style="list-style-type: none"> GeoBoard Tangram Number Chart 1-100 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Teaching Counting Guide Basic Facts Guide Place Value Concepts Guide Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 1

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Present word problems written and orally. • Act word problems out with objects or students. • Provide increased fluency practice with single digit addition and subtraction using flashcards. • Always interpret the equal sign as “the same as” to encourage students to recognize equations can be written in non-traditional ways. 	<ul style="list-style-type: none"> • Number Chart 1-20 • Number Line • Comparison Chart 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Provide students a place value mat to keep at their desk. • Provide increased fluency practice with skip counting by 10s. 	<ul style="list-style-type: none"> • Part, Part, Whole • Number Line • Base 10 Blocks • Place Value Mat • Number Comparison Chart 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA

		504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Provide students a place value mat to keep at their desk. • Provide increased fluency practice with skip counting by 10s. • Practice with timed and untimed paper activities. Provide immediate feedback to incorrect facts. 	<ul style="list-style-type: none"> • Base 10 Blocks • Place Value Mat • Hundreds Chart • Interactive Clock 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Present word problems written and orally. • Use stories where the unknown is in all positions. 	<ul style="list-style-type: none"> • GeoBoard • Fraction Circles • Fraction Strips • Base 10 Blocks 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 2

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Present word problems written and orally. • Use stories where the unknown is in all positions. 	<ul style="list-style-type: none"> • Base 10 Blocks • Place Value Mat • Number Comparison Chart 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability

		specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Teaching Counting Guide ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 3

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Review place value prior to multiplication instruction Emphasize the concept of multiplication as “repeated addition” and “___ groups of ___ items” Utilize concrete models (manipulatives) to demonstrate distributing equal groups Explicit visual model for multiplication and division Explicit instruction on the standard measurement system Have students explain concepts of multiplication and division in their own words Increased addition and subtraction fluency practice 		<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Basic Facts Guide Place Value Concepts Guide Place Value Computation Guide Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Increased fluency practice with multiplication and double digit addition Emphasize rectangles and squares when determining area on a plane 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Basic Facts Guide Place Value Computation Guide Anchor charts for commutative, associative, and distributive property with visuals Suggestions on disability specific accommodations: PSEA

		504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Utilize fraction manipulatives: unifix cubes, fraction cubes • Anchor charts: numerator and denominator • Utilize number line to build concept of fraction as a part of a whole • Utilize analog clocks • Explicit instruction on clock vocabulary: face, hands • Provide visual representation of common fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$) • Increased fluency practice skip counting by 5 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Basic Facts Guide ◦ Place Value Computation Guide ◦ Fractions as Numbers Guide • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Provide graph paper • Model annotating word problems • Increased fluency practice in multi digit addition and subtraction • Provide highlighters for identifying place value • Provide manipulatives: digital base 10 block 		<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Basic Facts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 4

Unit 1

Strategies

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Manipulatives

Support Resources

- National Center on Intensive Intervention:
 - [Basic Facts Guide](#)
 - [Place Value Concepts Guide](#)
- Suggestions on disability specific accommodations: [PSEA 504 Guide](#)

Unit 2

Strategies

Manipulatives

Support Resources

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- National Center on Intensive Intervention:
 - [Basic Facts Guide](#)
 - [Place Value Concepts Guide](#)
 - [Place Value Computation Guide](#)
- Suggestions on disability specific accommodations: [PSEA 504 Guide](#)

Unit 3

Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Basic Facts Guide ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
•		<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 5

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> 	<p>Mathematics Virtual Manipulatives:</p> <ul style="list-style-type: none"> Didax Place value discs: https://www.didax.com/apps/place-value/ Didax: Base 10 Blocks: https://www.didax.com/apps/base-ten-blocks/ Oryx Learning: Algebra Tiles: https://oryxlearning.com/manipulatives/algebra-tiles 	<ul style="list-style-type: none"> National Center on Intensive Intervention: <ul style="list-style-type: none"> Place Value Concepts Guide Place Value Computation Guide Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
	Mathematics Virtual	<ul style="list-style-type: none"> National Center on Intensive Intervention:

	<p>Manipulatives:</p> <ul style="list-style-type: none"> ● The Fractions App: “play” with visual fractions. ○ https://www.mathlearningcenter.org/apps/fractions ● Toy Theater: Multiple Apps to visualize fractions. ○ https://toytheater.com/category/teacher-tools/virtual-manipulatives/fraction-manipulatives/ ● Didax Fraction bars with number line. ○ https://www.didax.com/apps/fraction-number-line/ ● Polypad: Fraction bars and fraction circles. ○ https://mathigon.org/polypad ● Math Playground: 3D Builder ○ https://www.mathplayground.com/3d_builder.html ● Mathigon Polypad: Solids 	<ul style="list-style-type: none"> ○ Place Value Concepts Guide ○ Place Value Computation Guide ● Suggestions on disability specific accommodations: PSEA 504 Guide
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	https://mathigon.org/polypad#solutions	
Unit 3		
Strategies	Manipulatives	Support Resources
	<p>Mathematics Virtual Manipulatives:</p> <ul style="list-style-type: none"> • The Fractions App: “play” with visual fractions. <ul style="list-style-type: none"> ◦ https://www.mathlearningcenter.org/apps/fractions • Toy Theater: Multiple Apps to visualize fractions. <ul style="list-style-type: none"> ◦ https://toytheater.com/category/teacher-tools/virtual-manipulatives/fraction-manipulatives/ ◦ https://toytheater.com/area-perimeter-explorer/ ◦ https://toytheater.com/part-part-whole/ • Didax Fraction bars with 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ◦ Place Value Concepts Guide ◦ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide

	<p>number line.</p> <ul style="list-style-type: none"> ○ https://www.didax.com/apps/fraction-number-line/ ● Didax Pattern Blocks <ul style="list-style-type: none"> ○ https://www.didax.com/apps/pattern-blocks/ ● Polypad: Fraction bars and fraction circles. <ul style="list-style-type: none"> ○ https://mathigon.org/polypad ● Math Playground: Thinking Blocks: various formats and presentations of tape diagrams. <ul style="list-style-type: none"> ○ https://www.mathplayground.com/thinkingblocks.html 	
Unit 4		
Strategies	Manipulatives	Support Resources

<ul style="list-style-type: none"> • 	<p>Mathematics Virtual Manipulatives:</p> <ul style="list-style-type: none"> • Interactive Cartesian Coordinates <ul style="list-style-type: none"> ○ https://www.mathsisfun.com/data/cartesian-coordinates-interactive.html ○ Hit the target game: https://www.mathsisfun.com/data/click-coordinates.html • The Fractions App: “play” with visual fractions. <ul style="list-style-type: none"> ○ https://www.mathlearningcenter.org/apps/fractions • Toy Theater: Multiple Apps to visualize fractions. <ul style="list-style-type: none"> ○ https://toytheater.com/category/teacher-tools/virtual-manipulatives/fraction-manipulatives/ 	<ul style="list-style-type: none"> • National Center on Intensive Intervention: <ul style="list-style-type: none"> ○ Place Value Concepts Guide ○ Place Value Computation Guide • Suggestions on disability specific accommodations: PSEA 504 Guide
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	<ul style="list-style-type: none"> • Toy Theater Coordinate Graph: <ul style="list-style-type: none"> ○ https://toytheater.com/coordinate-graph/ • Didax Fraction bars with number line. <ul style="list-style-type: none"> ○ https://www.didax.com/apps/fraction-number-line/ • Polypad: Fraction bars and fraction circles. <ul style="list-style-type: none"> ○ https://mathigon.org/polypad • Whiteboard.chat <p>Whiteboard.chat [go to “tools”, then “grids”]</p>	
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Grade 6

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> With fractions, teach the “ruler family” first (halves, quarters, eighths, sixteenths.) Then add fifths and tenths, followed by thirds and sixths. At each level discuss “equal exchanges” so that the students can easily shift from one denominator into another. Create the visual understanding of a fraction as a “piece of a whole”. Remind the student that we can only add or subtract things that are the same. Count objects: 1 apple, 2 apples, 3 apples, etc. Choose lots of different objects, then select denominators. Allow the student to go beyond 1, e.g. 1 half, 2 halves, 3 halves, 4 halves, etc. “Wow...that’s a lot of halves. Is there another way we could say that?” Show this with images (such as pizzas). Long division: Support with “partial” quotients. Work with the student to make “efficient” guesses as they go through the process. Work through progression tables (only use proportional scenarios here). Show the relationship between rows and columns in the table using multiplication and division. When working with decimals, always use the “place” value names. Remember that we can only add or subtract things that are the same, so we need to “exchange” when they are different (10 tenths = 1 whole, etc.) 	<p>Cuisinaire Rod supporting text. Virtual Manipulatives (https://mathsbot.com/manipulatives/rods)</p> <p>Fraction circles: https://toytheater.com/fraction-circles/</p>	<ul style="list-style-type: none"> Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
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<ul style="list-style-type: none"> • With exponents, focus on the definition (the number of times the base is used as a factor). Expand terms into multiplications ($2^3 = 2 \star 2 \star 2$) whenever needed. • Read variables as real items: $2a + 3b$ becomes 2 apples + 3 bananas. (For x, I use “box of cookies” because I could not think of anything in a grocery store that started with x) • Use algebra tiles to show order of operations, especially the distributive property and equality. • Progression tables 	<ul style="list-style-type: none"> • Algebra Tiles • Balance Scale • Cubes <p>Video: Nets Interactive Nets</p>	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Use algebra tiles to show order of operations, especially the distributive property and equality. • Use Geoboards to help with polygons and area • Use plastic unit squares to help with area. • Area hint: Take any triangle. Clone it. Rotate the clone 180 degrees and match them up to get a parallelogram. Tape the triangles together, then cut on a line perpendicular to the base to get two pieces. Switch the two places to get a rectangle. • Progression tables 	<ul style="list-style-type: none"> • Algebra Tiles • Balance Scale • Geoboard • One-inch square tiles 	<ul style="list-style-type: none"> • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • Progression tables 		<ul style="list-style-type: none"> • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 7		
Unit 1		
Strategies	Manipulatives	Support Resources
•		<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 2		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> • Suggestions on disability specific accommodations: PSEA 504 Guide

Grade 8

Unit 1

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Highlight the “th” in The names of decimal values to emphasize the difference between them and whole numbers. Example: hundredths Relate the names of 3D shapes to real life items. Use visuals when possible Ex: ice cream cones, Rubik's Cube, Cylinders in the Real World Provide increased fluency practice with the basic properties of exponents Utilize visual or hands on-models to accompany the teaching of volume formulas Utilize inquiry based activities to allow students to explore properties of exponents. Show exponents as repeated multiplication 	<ul style="list-style-type: none"> Place Value Move Digital Manipulative 	<ul style="list-style-type: none"> Provide access to a place value chart. Example Provide a graphic organizer for the properties of exponents. Graphic Organizers to Help Kids With Math Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 2

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> Provide pre-labeled graph paper (x and y axis). Allow students to use a graphing calculator to develop an understanding of slope. Pre-teach independent and dependent variable vocabulary without numbers. Example Provide increased fluency practice solving equations in one variable. Provide increased fluency practice matching graphs to the equations or situations they model. 	<ul style="list-style-type: none"> https://www.desmos.com/ 	<ul style="list-style-type: none"> X and Y Labeled Graph Paper Desmos Sliders and movable points Suggestions on disability specific accommodations: PSEA 504 Guide

Unit 3

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none">• Reduce the number of problems per page or screen so that students may look at one coordinate grid at a time.• Reduce the number of transformations to be performed on an image.• Emphasized the reasons for the names of angle pairs created by parallel lines and transversals.• Reference a clock to reinforce the words clockwise and counterclockwise.• Providing increased fluency practice multiplying by fractions.	<ul style="list-style-type: none">• Interactive site: Parallel Lines, and Pairs of Angles.	<ul style="list-style-type: none">• Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		
Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none">• Provide pre-labeled graph paper.• Prioritize teaching vocabulary related to linear associations.• Provide increased fluency practice analyzing scatter plots and determining what, if any, association is present.		<ul style="list-style-type: none">• Graph Paper• Suggestions on disability specific accommodations: PSEA 504 Guide

Algebra 1		
Unit 1		
Strategies	Manipulatives	Support Resources
•		<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 2		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> • Suggestions on disability specific accommodations: PSEA 504 Guide

Geometry

Unit 1

Strategies

- teach key transformations separately (rotation, reflection, translation), allowing time to practice each individually
- allow students to reference teacher or student created glossary of terms, with pictures as appropriate
- reduce the number of problems on a page
- utilize guided notes for teaching triangle congruence criteria
- chunk formal construction activities to provide checks for understanding after each step

Manipulatives

Support Resources

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- Suggestions on disability specific accommodations: [PSEA 504 Guide](#)

Unit 2

Strategies

Manipulatives

Support Resources

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- Suggestions on disability specific accommodations: [PSEA 504 Guide](#)

Unit 3

Strategies

Manipulatives

Support Resources

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- Suggestions on disability specific accommodations: [PSEA 504 Guide](#)

Unit 4		
Strategies	Manipulatives	Support Resources
•		<ul style="list-style-type: none"> Suggestions on disability specific accommodations: PSEA 504 Guide

Algebra 2		
Unit 1		
Strategies	Manipulatives	Support Resources
•		<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 2		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 3		
Strategies	Manipulatives	Support Resources
	•	<ul style="list-style-type: none"> • • Suggestions on disability specific accommodations: PSEA 504 Guide
Unit 4		

Strategies	Manipulatives	Support Resources
<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> • Suggestions on disability specific accommodations: PSEA 504 Guide