

Handouts

















Differentiating Instruction: Building Mathematical Academic Language Skills for Culturally and Linguistically Diverse Students

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Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

COMMON CORE MATHEMATICAL PRACTICE STANDARDS		
	I can make sense of problems and persevere in solving them.	
	I can reason abstractly and quantitatively.	
	I can construct viable arguments and critique the reasoning of others.	
	I can model with mathematics.	
	I can use appropriate tools strategically.	
	I can attend to precision.	
	I can look for and make use of structure.	
	I can look for and express regularity in repeated reasoning.	

Student Supports

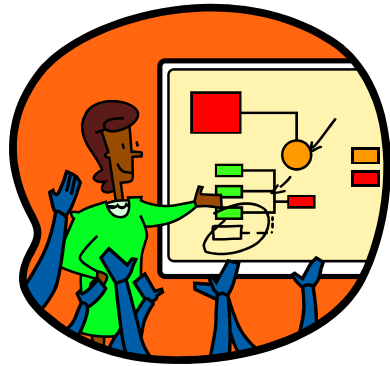
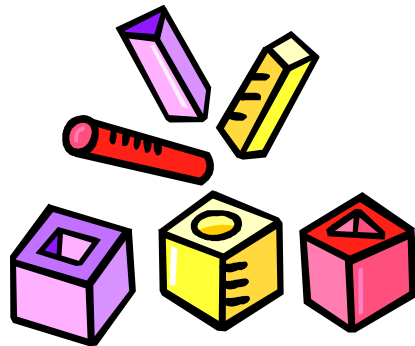


Figure 3G: Examples of Sensory, Graphic and Interactive Supports

Sensory Supports	Graphic Supports	Interactive Supports
<ul style="list-style-type: none"> • Real-life objects (realia) • Manipulatives • Pictures & photographs • Illustrations, diagrams & drawings • Magazines & newspapers • Physical activities • Videos & Films • Broadcasts • Models & figures 	<ul style="list-style-type: none"> • Charts • Graphic organizers • Tables • Graphs • Timelines • Number lines 	<ul style="list-style-type: none"> • In pairs or partners • In triads or small groups • In a whole group • Using cooperative group structures • With the Internet (Web sites) or software programs • In the native language (L1) • With mentors

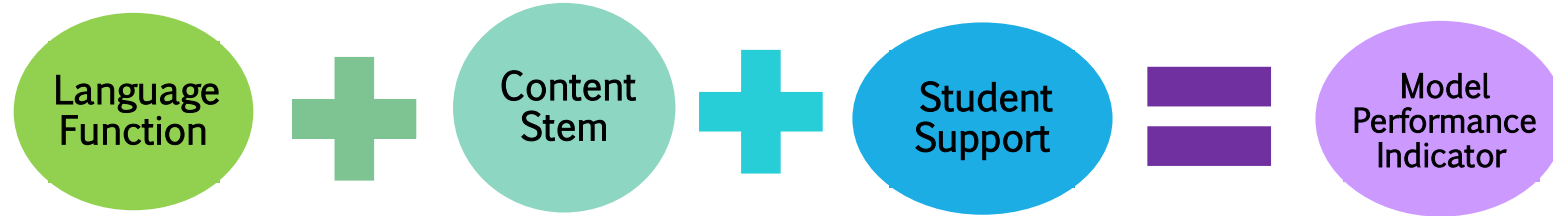
Figure 3H: Specific Examples of Sensory Supports



Supports related to the language of Language Arts	Supports related to the language of Mathematics	Supports related to the language of Science	Supports related to the language of Social Studies
Illustrated word/phrase walls Felt or magnetic figures of story elements Sequence blocks Environmental print Posters or displays Bulletin boards Photographs Cartoons Audio books Songs/Chants	Blocks/Cubes Clocks, sundials and other timekeepers Number lines Models of geometric figures Calculators Protractors Rulers, yard/meter sticks Geoboards Counters Compasses Calendars Coins	Scientific instruments Measurement tools Physical models Natural materials Actual substances, organisms or objects of investigation Posters/Illustrations of processes or cycles	Maps Globes Atlases Compasses Timelines Multicultural artifacts Aerial & satellite photographs Video clips

Adopted from Gottlieb, M. (2006). *Assessing English language learners: Bridges from language proficiency to academic achievement*. Thousand Oaks, CA: Corwin Press.

Using WIDA to Differentiate Instruction



I can **Identify and solve** fractional part problems with a partner using models.

Using WIDA to Differentiate
4th Grade CCSS for Mathematics

Language Functions Level 1 & 2	Content Stems CCSS for Mathematics	Student Supports
Level 1 & 2 Listen/Speak <ul style="list-style-type: none"> Answer questions Determine Find Follow one- step commands Identify _____ Match _____ Mimic Point to _____ Produce phrases/ words Repeat _____ Respond to questions Seek information Select Sequence 	<ul style="list-style-type: none"> Using the four operations with whole numbers to solve problems Factors and multiples Patterns Place value for multi-digit whole numbers Multi-digit arithmetic Fraction equivalence and ordering Fractional parts Decimal notation for fractions Compare decimal fractions Measurement and conversion of measurements from a larger unit to a smaller unit Data Concepts of angle and measure angles Lines and angles, and classify shapes by properties of their lines and angles 	<ul style="list-style-type: none"> Blocks/ Cubes Number Lines/ Timelines Models/ Figures Calculators Protractors Rulers, yard/ meter sticks Geoboards Counters Compasses Calendars Coins Clocks, timers Bilingual dictionaries Charts/ Tables/ Graphs/ Cooperative groups: Pairs, Partners, Triads Graphic organizers Group/partner reading Highlighted text Illustrated models/ scenes/text
Level 1 & 2 Read/Write <ul style="list-style-type: none"> Solve Answer questions 	<ol style="list-style-type: none"> Make sense of problems and persevere in solving them Reason abstractly and quantitatively 	

Sentence Starters and Frames

Sentence Starters:

- I think ____ because.....
- My first step is...
- I learned ____ when.....
- If ____ then....
- The answer is ____ because.....
- A better strategy would be ____ because...
- I solved the problem by...
- I agree/disagree because...
- I solved the problem by...

Sentence Frames:

- _____ is the numerator.
- _____ is the denominator.
- _____ can be simplified to _____.
- _____ is greater than/ less than _____.
- I divided the _____ into _____.

Anchor Charts

Teaching With a Mountain View

Divide Fractions

I can... divide a fraction by a fraction, a whole # by a fraction, and a fraction by whole #.

<p>Step #1: Convert whole numbers to fractions, OR change mixed #s to improper fractions.</p>	$\frac{3}{4} \div \frac{1}{4}$	$\frac{3}{1} \div \frac{1}{4}$	$\frac{1}{4} \div \frac{3}{1}$
<p>Step #2: Find the RECIPROCAL of the divisor. (The 2nd number)</p>	$\frac{3}{4} \div \frac{1}{4} \times \frac{4}{1}$	$\frac{3}{1} \div \frac{1}{4} \times \frac{4}{1}$	$\frac{1}{4} \div \frac{3}{1} \times \frac{1}{3}$
<p>Step #3: Replace the division symbol with a multiplication symbol.</p>	$\frac{3}{4} \times \frac{4}{1}$	$\frac{3}{1} \times \frac{4}{1}$	$\frac{1}{4} \times \frac{1}{3}$
<p>Step #4: MULTIPLY the fractions across.</p>	$\frac{3}{4} \times \frac{4}{1} = \frac{12}{4}$	$\frac{3}{1} \times \frac{4}{1} = \frac{12}{1}$	$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$
<p>Step #5: SIMPLIFY. If needed, convert to mixed number or whole number.</p>	$\frac{12}{4} = \boxed{3}$	$\frac{12}{1} = \boxed{12}$	$\frac{1}{12}$
<p>Keep → Change → Flip</p> <p>First Fraction → × Second Fraction (reciprocal)</p>	<p>Fraction divided by a Fraction.</p>	<p>Whole # divided by a fraction.</p>	<p>Fraction divided by a whole number.</p>