

Instructional Strategy to UNDERSTAND WORD PROBLEMS	- Provide WP in equal grouping situations - Gradually add more challenging types of WP - Ask them to explain thinking using references from WP - Ask them to show thinking with Base 10 pictures			Instructional Strategy to ENCOURAGE MORE ABSTRACT STRATEGIES	- Help them record strategies in equations - Encourage them to come up with a plan using what they already know - Encourage them to find a different easier/shorter method - Help them learn from each other by discussing similarities and differences b/w strategies			Instructional Strategy to CREATE FOCUSED TASK	- Choose #/sizes purposefully - Create sequenced WP w/specific purpose - Encourage different partitioning or compensating by using T/F Open # sentences			Questions		
Feedback: Answering Incorrectly	Rephrase, elaborate or personalize	Easier numbers or WP structure	Student explains strategy used	Question WP quantities and relationships	Revert to proven strategies	Feedback: Answering Correctly	Record strategy with equation	Use multiple strategies; be more efficient	Compare/Contrast strategies	Student explains strategy	Use nos. in WP to encourage strategies	How else could you have...? How are those the same? How are those different? What would you do if...? What would happen if...? If I do this, what will happen? What else could you have done? Is there any other way you could...? Why did you...?/How did you...? How did you know? What does this represent? How did you know where...? How did you know when...? How could you record your work? How could you share your discovery? How did you estimate what the answer could be? How did you prove your estimate? What did you do? What strategy did you use? Is there a pattern? Will it be the same if we use different numbers? Is it always true?		
Multiply/Divide Word Problem Types						Add/Subtract Word Problem Types								
<i>Equal Grouping: Multiplication</i> 5 groups x 3 items/group = __ items		<i>Equal Grouping: Measurement</i> __ groups x 12 items/group = 60 items		<i>Equal Grouping: Partitive</i> 12 groups x __ items/group = 60 items		<i>Join Result Unknown</i> 2 + 3 = __		<i>Join Change Unknown</i> 2 + __ = 5		<i>Join Start Unknown</i> __ + 3 = 5				
<i>Price: Multiplication</i> 5 items x \$3/item = \$__		<i>Price: Measurement</i> __ items x \$3/item = \$60		<i>Price: Partitive</i> 5 items x \$__ /item = \$60		<i>Separate Result Unknown</i> 2 - 3 = __		<i>Separate Change Unknown</i> 5 - __ = 1		<i>Separate Start Unknown</i> __ - 4 = 1				
<i>Rate: Multiplication</i> 5 length of time x 3 distance/length of time = __ total distance unit		<i>Rate: Measurement</i> __ length of time x 3 distance/length of time = 60 total distance unit		<i>Rate: Partitive</i> 5 length of time x __ distance/length of time = 60 total distance unit		<i>Whole Unknown (No Action)</i> 15 girls and 5 boys were playing soccer. How many children were playing soccer?			<i>Part Unknown (No Action)</i> Amy is holding some pennies and quarters. She is holding 12 coins. Two coins are quarters. How many pennies is she holding?					
<i>Multiplicative Comparison Multiplication</i> 3 times as much x 5 items = __ total items		<i>Multiplicative Comparison Measurement</i> __ times as much x 5 items = 60 total items		<i>Multiplicative Comparison Partitive</i> 3 times as much x __ items = 60 total items		<i>Compare Different Unknown (Both sides known) (No Action)</i> Will has 12 crayons. Lucy has 7 crayons. How many more crayons does Will have than Lucy?		<i>Compare Quantity Unknown (One side known, difference given about unknown side) (No Action)</i> Cole has 11 books. Kevin has 6 more books than Cole. How many books does Kevin have?		<i>Compare Reference Unknown (Difference given but only about 1st side) (No Action)</i> Mallory has 13 stickers. She has 5 more stickers than Kendra. How many stickers does Kendra have?				
<i>Array: Multiplication</i> 3 rows x 2 columns = __ total pieces			<i>Array: Division</i> __ rows x 2 columns = 12 total pieces 2 rows x __ columns = 12 total pieces			Equal Sign Proficiency Level 1: Articulate the thinking about equal sign, but clearly have a misconception about it; Level 2: First accept as the use of the equal sign other than a + b = c format; Level 3: Recognize equal sign as "the same as." Compare 2 sides by computing; Level 4: Use relational thinking			Addition Properties Commutative Property: a + b = b + a Associative Property: (a + b) + c = a + (b + c) Inverse: If a + b = c, then c - b = a Identity: a + 0 = a Equality: If a = b, then a + c = b + c Note: Commutative and Associative does NOT hold true for subtraction					
<i>Area: Multiplication</i> 5 unit x 3 unit = __ units squared			<i>Area: Division</i> 5 unit x __ unit = 15 units squared __ unit x 3 unit = 15 units squared											
<i>Combination: Multiplication</i> 3 choices x 2 choices = __ total combos			<i>Combination: Division</i> __ choices x 2 choices = 10 total combos 2 choices x __ choices = 12 total combos											
Multiplication Properties	Commutative a x b = b x a	Associative (a x b) x c = a x (b x c)	Distributive a (b + c) = ab + ac	Inverse If a x b = c, then c / b = a	Comm. & Assoc. NOT for division									
Multiply/Divide Single-Digit Strategies		Multiply Multi-Digit Strategies		Divide Multi-Digit Strategies		Equal Grouping		Multiple Groups Strategies		Add/Subtract Single-Digit Strategies		Add/Subtract Multi-Digit Strategies		E C M
Direct Modeling With Ones With Ones and Tens Counting Rhythmic Partial Skip Skip Repeated Add/Subtract Relational Thinking Doubling Derived Facts		Direct Modeling With Ones With Ones and Tens Counting Skip Count/Repeat Add Simple Doubling Relational Thinking Complex Doubling Partitioning Multiplier/Multiplicand Both Factors Compensating		Direct Modeling With Ones With Ones and Tens Counting Skip Counting Repeat Add/Subtracting Relational Thinking Complex Doubling Partitioning/Building up Multiple Divisor Non-Decade Numbers 2, 5, 10, 100 Compensating		Direct Modeling Non-anticipatory Counting/Additive Coord. Sharing One Item at a Time Sharing Groups of Items Relational Thinking Ratio (Repeat Halving/Factors) Multiplicative Coordination <i>Partitive division</i> 12 groups x __ items/group = 60 items Multiplicand is a fraction.		Direct Modeling Each unit fraction drawn Counting Repeat Add/Simple Doubling Relational Thinking Complex Doubling Compensating Grouping/Combining (>2) Multiplicative Strategies <i>W: Whole No. F: Fraction</i> Mul W x F = $\frac{W}{F}$ or $\frac{F}{W}$ P Div W x $\frac{F}{W}$ = F or F M Div $\frac{W}{F}$ x F = W or F		Direct Modeling Joining All, Adding On Separating From, To Comparing Counting Counting On From First No. Counting On From Larger No. Counting On To Counting Down, Down To Relational Thinking Doubles Doubles + 1 Sums to 10		Direct Modeling w/PV Counting Incrementing Tens and Ones Relational Thinking Compensating Formal Algorithm		