

## Figure 2.6 Classification of Word Problems

PROBLEM TYPE	JOIN	(Result Unknown) Connie had 5 marbles. Juan gave her 8 more marbles. How many marbles does Connie have altogether?	(Change Unknown) Connie has 5 marbles. How many more marbles does she need to have 13 marbles altogether?	(Start Unknown) Connie had some marbles. Juan gave her 5 more marbles. Now she has 13 marbles. How many marbles did Connie have to start with?
	Separate	(Results Unknown) Connie had 13 marbles. She gave 5 marbles to Juan. How many marbles does she have left?	(Change Unknown) Connie had 13 marbles. She gave some to Juan. Now she has 5 marbles left. How many marbles did Connie give to Juan?	(Start Unknown) Connie had some marbles. She gave 5 to Juan. Now she has 8 marbles left. How many marbles did Connie have to start with?
	Part-Part-Whole	(Whole Unknown) Connie has 5 red marbles and 8 blue marbles. How many marbles does she have?		(Part Unknown) Connie has 13 marbles. Five are red and the rest are blue. How many blue marbles does Connie have?
	Compare	(Difference Unknown) Connie has 13 marbles. Juan has 5 marbles. How many more marbles does Connie have than Juan?	(Compare Quantity Unknown) Juan has 5 marbles. Connie has 8 more than Juan. How many marbles does Connie have?	(Referent Unknown) Connie has 13 marbles. She has 5 more marbles than Juan. How many marbles does Juan have?

Figure 2. Primary Addition and Subtraction Strategies

Problem	Direct Modeling	Counting	Derived Facts
Robin had 4 toy cars. Her friends gave her 7 more toy cars for her birthday. How many toy cars did she have then?	Makes a set of 4 counters and a set of 7 counters. Pushes the two sets together and counts all the counters.	Counts “4(pause), 5, 6, 7, 8, 9, 10, 11,” extending a finger with each count. “The answer is 11.” [The counting sequence may also begin with the larger numbers.]	“4 is the same as 3 + 1, and 7 and 3 is 10, so the answer is one more, 11.”
Colleen had 12 guppies. She gave 5 guppies to Roger. How many guppies does Colleen have left?	Makes a set of 12 counters and removes 5 of them. Then counts the remaining counters.	Counts back “12, 11, 10, 9, 8, (pause), 7. It’s 7.” Uses fingers to keep track of the number of steps in the counting sequence.	“5 + 5 is 10 and 2 more is 12, so it’s 7.”
Robin has 4 toy cars. How many more toy cars does she need to get for her birthday to have 11 toy cars altogether?	Makes a set of 4 counters. Makes a second set of counters counting “5, 6, 7, 8, 9, 10, 11” until there is a total of 11 counters. Counts the 7 counters in the second set.	Counts “4 (pause 5, 6, 7, 8, 9, 10, 11” extending a finger with each count. Counts the 7 extended fingers. “It’s 7.”	“4 + 6 is 10 and 1 more is 11. So it’s 7.”
Mark has 6 mice. Joy has 11 mice. Joy has how many more mice than Mark?	Makes a row of 6 counters and a row of 11 counters next to it. Counts the 5 counters in the row of 11 that are not matched with the set of 6.	There is no counting analog of the matching strategy.	“6 + 6 is 12, and 11 is one less, so it’s 5.”