NUMERACY CONSULTANTS

Word Problem Prompting Schema Guide

Instructional Prompts for Addition & Subtraction

Schema 1
Total: Part-Part-Whole

Schema 2
Change

Schema 3
Comparison

What is schema-based instruction?

Instead of hunting for keyword shortcuts, schema-based instruction teaches students to ask: "What kind of story is this?" When students can name the structure of a problem, they can identify what's missing — and choose the right operation every time.

TEACHER TIP

Start with the "Identify the Schema" prompt on each page. Once students name the schema, work through the remaining prompts in order. Your goal is building student language for problem structure — not rushing to the answer.

The Three Schemas at a Glance

	Total: Part-Part-Whole	Change	Comparison
Structure	Static — no action	Dynamic — action occurs	Static — two amounts compared
Signal words	altogether, in all, combined	lost, bought, earned, gave away	more than, fewer than, taller
Missing value	Total OR either part	Start, Change, OR Result	Big set, Small set, OR Difference
Organizer	Part-Part-Whole mat	Change sequence map	Comparison bar model

SCHEMA 1

Total: Part-Part-Whole

Two parts combine into one total. No action — just pieces of a whole.

TEACHER PROMPTS

1	Identify the Schema	"Are these groups being combined into one big group, or are we looking at pieces of a whole?"
2	Find the Parts	"What are the two smaller groups? Let's label them Part A and Part B."
3	Find the Missing Piece	"Do we know the total (the 'big pile'), or are we trying to find it?"
4	Visualize It	"If we put all of Part A and Part B into one box, how many would be in the box?"
5	Choose the Equation	"Should we add to find the total — or subtract one part from the total to find the missing piece?"

TEACHER TIP

Key clue: nothing HAPPENS in the story. Two groups simply exist together. If students confuse this with Change, ask: "Is there an action verb? Did anyone do anything?" If not — it's Part-Part-Whole.

VISUAL EXAMPLE

EXAMPLE PROBLEM

There are 8 red apples and 5 green apples in a basket. How many apples are there in all?

Graphic Organizer: Part-Part-Whole Mat

Part A	+	Part B	=	TOTAL
8 red apples		5 green apples		? apples

Solution: 8 + 5 = 13 — There are 13 apples in all.

SCHEMA 2

Change

Something happens that changes the starting amount — up or down.

TEACHER PROMPTS

1	Identify the Schema	"Did something happen in this story that changed how many there were?"
2	Find the Beginning	"How much did we have at the very start, before anything happened?"
3	Describe the Action	"What was the change event? Did someone give some away, or get more? Did the amount go up (+) or down (–)?"
4	Find the Result	"After the event happened, how much was left at the end?"
5	Map the Sequence	"Let's map the story: What was the Start → the Change → the Result?"

TEACHER TIP

Look for action verbs: gave away, bought, earned, lost, ate, found. The three-part sequence (Start → Change → Result) is the backbone. If students can name all three parts, they can find what's missing.

VISUAL EXAMPLE

EXAMPLE PROBLEM

Mia had 12 cookies. She gave 4 to her friend. How many cookies does Mia have now?

Graphic Organizer: Change Sequence Map

START		CHANGE		RESULT
12 cookies	– 4 →	gave away 4	=	? cookies

Solution: 12 – 4 = 8 — Mia has 8 cookies left.

SCHEMA 3

Comparison

Two amounts are compared to find the "gap" between them.

TEACHER PROMPTS

1	Identify the Schema	"Are we adding things together, or looking at who has more and who has less?"
2	Find Bigger & Smaller	"Who has the larger amount (the Big set)? Who has the smaller amount (the Small set)?"
3	Find the Difference	"We're not looking for the total — we're looking for the gap. How much more does [Person A] have than [Person B]?"
4	Watch the Language	"The word 'more' is in the problem. Does that mean we add — or is it just telling us the size of the gap?"
5	Use the Bar Model	"If we lined their items up side-by-side, where would [Person B]'s bar stop compared to [Person A]'s?"

TEACHER TIP

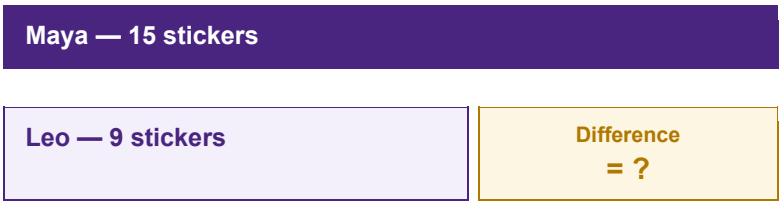
Comparison is the most misread schema. Students see 'more' and immediately add — but 'more' often names the difference, not the operation. Draw the bar model every single time.

VISUAL EXAMPLE

EXAMPLE PROBLEM

Maya has 15 stickers. Leo has 9 stickers. How many more stickers does Maya have than Leo?

Graphic Organizer: Comparison Bar Model



Solution: 15 − 9 = 6 — Maya has 6 more stickers than Leo.

QUICK-CHECK DIAGNOSTIC

When a student is stuck, use this table to guide them to the right schema.

Match what the student notices in the problem to the prompt in the center column.

IF THE STUDENT SEES…	SAY THIS:	IT'S LIKELY…
Two different categories (e.g., red apples and green apples)	*"Are we putting these two groups together to see the whole bunch?"*	**Total: Part-Part-Whole**
An action verb (e.g., lost, ate, bought, found)	*"Did the amount change from the beginning to the end of the story?"*	**Change**
Comparative language (e.g., more than, fewer than, taller)	*"Are we comparing two people or things to find the gap between them?"*	**Comparison**

Common Misconceptions

Watch for these patterns when students struggle to identify the schema.

Total: Part-Part-Whole

Students add even when the total is given and a part is missing. Ask: "What's in the box — and what are we trying to find?"

Change

Students miss the direction of change. Always ask: "Did the amount go UP or DOWN?" before choosing the operation.

Comparison

Seeing 'more' and immediately adding. Remind students: 'more' often names the GAP, not the operation.

NOTES