



Instructional Routines for Mathematics Intervention

The purpose of these mathematics instructional routines is to provide educators with materials to use when providing intervention to students who experience difficulty with mathematics. The routines address content included in the grades 2-8 Texas Essential Knowledge and Skills (TEKS). There are 23 modules that include routines and examples – each focused on different mathematical content. Each of the 23 modules include vocabulary cards and problem sets to use during instruction. These materials are intended to be implemented explicitly with the aim of improving mathematics outcomes for students.

Instructional Routines for Mathematics Intervention

MODULE 5

Addition of Whole Numbers



Module 5: Addition of Whole Numbers

Mathematics Routines

A. Important Vocabulary with Definitions

Term	Definition
add/addition	To put amounts together to find the sum or to increase a set.
addend	Any numbers that are added together.
algorithm	A procedure or description of steps that can be used to solve a problem.
computation	The action used to solve a problem.
equal sign	The symbol that tells you that two sides of an equation are the same, balanced, or equal.
hundreds column	The column with digits in the hundreds place.
join	To add to an existing set.
ones column	The column with digits in the ones place.
plus sign	The symbol that tells you to add.
regroup/trade/exchange	The process of exchanging 10 ones for 1 ten, 10 tens for 1 hundred, 10 hundreds for 1 thousand, etc.
sum	The result of adding two or more numbers or the total number when you combine sets.
tens column	The column with digits in the tens place.
together	To combine sets or numbers.

B. Background Information

If your focus is on the conceptual understanding of addition, see *Module 4: Concepts of Addition*. This module, *Module 5*, focuses on addition computation of whole numbers. As you focus on computation, continue to emphasize addition as combining and addition as joining to a set because students will see these concepts within word problems.

For learning computation with addition, we recommend presenting problems vertically. Some students may require explicit instruction on translating a horizontal problem (e.g., $17 + 59$) to the vertical presentation (see below). Depending upon the algorithm, leave enough space above or below the problem for students to complete their written work.

Every student should develop efficiency with an addition computation strategy. In the following sections, we provide examples of (1) addition with a traditional algorithm – no regrouping, (2) addition

Students 334.
Teacher **That's right. 200 plus 120 plus 14 equals 334. That's the total sum!**
Students (Write 334.)
Teacher **So, if you have a set of 259 and a set of 75, when you combine (or join) the sets, the sum is 334. 259 plus 75 is 334. Let's review. What's an addend?**
Students One of the sets or numbers added together in an addition problem.
Teacher **What's a sum?**
Students The total number when you combine sets, or the result of adding two or more numbers together.
Teacher **How could you explain solving this problem to a friend?**
Students We added the hundreds. Then, we added the tens. Then, we added the ones. We added the partial sums of the hundreds, tens, and ones. The sum was the total of the partial sums.

D. Problems for Use During Instruction

[See Module 5 Problem Sets.](#)

E. Vocabulary Cards for Use During Instruction

[See Module 5 Vocabulary Cards.](#)

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Module 5: Addition of Whole Numbers

Problem Sets

- A. Two-digit numbers without regrouping (20)
- B. Two-digit numbers with regrouping (20)
- C. Three-digit numbers without regrouping (10)
- D. Three-digit numbers with regrouping (10)
- E. Three- and two-digit numbers without regrouping (5)
- F. Three- and two-digit numbers with regrouping (5)
- G. Two- and one-digit numbers without regrouping (5)
- H. Two- and one-digit numbers with regrouping (5)

A.

$$\begin{array}{r} 52 \\ + 32 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 46 \\ + 51 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 42 \\ + 12 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 53 \\ + 31 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 82 \\ + 11 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 35 \\ + 22 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 25 \\ + 33 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 48 \\ + 20 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 30 \\ + 18 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 60 \\ + 19 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 87 \\ + 10 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 11 \\ + 56 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 10 \\ + 66 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 65 \\ + 12 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 70 \\ + 17 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 29 \\ + 10 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 11 \\ + 36 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 39 \\ + 50 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 46 \\ + 42 \\ \hline \end{array}$$

A.

$$\begin{array}{r} 22 \\ + 33 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 15 \\ + 89 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 52 \\ + 78 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 74 \\ + 67 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 97 \\ + 56 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 84 \\ + 36 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 54 \\ + 88 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 98 \\ + 93 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 19 \\ + 92 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 43 \\ + 67 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 54 \\ + 57 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 44 \\ + 78 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 48 \\ + 92 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 39 \\ + 47 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 74 \\ + 96 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 44 \\ + 88 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 91 \\ + 39 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 62 \\ + 69 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 67 \\ + 77 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 56 \\ + 29 \\ \hline \end{array}$$

B.

$$\begin{array}{r} 44 \\ + 66 \\ \hline \end{array}$$

c.

854

+ 130



c.

220

+ 542



c.

$$\begin{array}{r} 226 \\ + 633 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 731 \\ + 241 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 320 \\ + 139 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 395 \\ + 103 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 151 \\ + 313 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 703 \\ + 202 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 117 \\ + 120 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 100 \\ + 490 \\ \hline \end{array}$$

D.

$$\begin{array}{r} 967 \\ + 244 \\ \hline \end{array}$$

D.

$$\begin{array}{r} 134 \\ + 519 \\ \hline \end{array}$$

D.

806

+ 586



D.

888

+ 453

D.

$$\begin{array}{r} 656 \\ + 615 \\ \hline \end{array}$$

D.

267

+ 155



D.

338

+ 374

D.

$$\begin{array}{r} 792 \\ + 638 \\ \hline \end{array}$$

D.

$$\begin{array}{r} 897 \\ + 565 \\ \hline \end{array}$$

D.

907

+ 444



E.

965

+ 30



E.

610

+ 43



E.

$$\begin{array}{r} 700 \\ + 97 \\ \hline \end{array}$$

E.

418

+ 60



E.

506

+ 43



F.

409

+ 89



F.

527

+ 74



F.

326

+ 37



F.

256

+ 44



F.

945

+ 69



G.

$$\begin{array}{r} 11 \\ + 3 \\ \hline \end{array}$$

G.

$$\begin{array}{r} 76 \\ + 2 \\ \hline \end{array}$$

G.

$$\begin{array}{r} 83 \\ + 5 \\ \hline \end{array}$$

G.

$$\begin{array}{r} 37 \\ + 2 \\ \hline \end{array}$$

G.

$$\begin{array}{r} 24 \\ + 5 \\ \hline \end{array}$$

H.

$$\begin{array}{r} 16 \\ + 4 \\ \hline \end{array}$$

H.

$$\begin{array}{r} 25 \\ + 8 \\ \hline \end{array}$$

H.

$$\begin{array}{r} 46 \\ + 5 \\ \hline \end{array}$$

H.

$$\begin{array}{r} 58 \\ + 7 \\ \hline \end{array}$$

H.

$$\begin{array}{r} 83 \\ + 9 \\ \hline \end{array}$$

Module 5: Addition of Whole Numbers

Vocabulary Cards

add/addition

addend

algorithm

computation

equal sign

hundreds column

join

ones column

plus sign

regroup/trade/exchange

sum

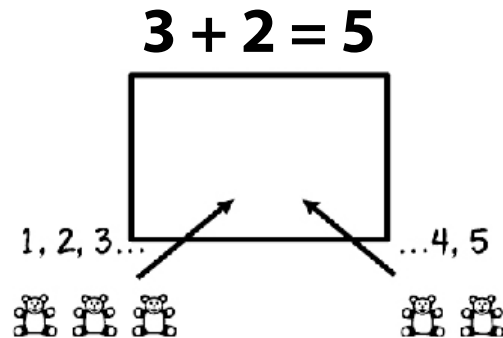
tens column

together

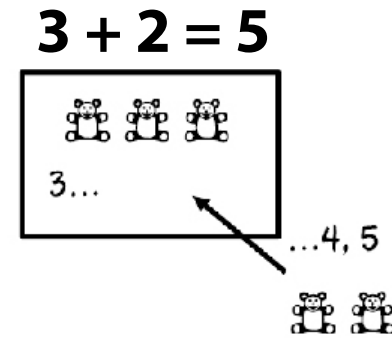
add/addition

To put amounts together to find the sum or to increase a set.

To put amounts together



To increase a set



addend

Any numbers that are added together.

$$6 + 2 = 8$$

6 and **2** are addends

algorithm

A procedure or description of steps that can be used to solve a problem.

computation

The action used to solve a problem.

equal sign

The symbol that tells you that two sides of an equation are the same, balanced, or equal.

$$12 + 8 = 20$$

= is the **equal sign**

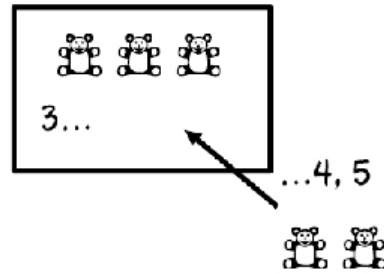
hundreds column

The column with digits in the hundreds place.

In the number **423**, **4** is in the hundreds column.

join

To add to an existing set.



ones column

The column with digits in the ones place.

In the number 42**3**, **3** is in the ones place.

plus sign

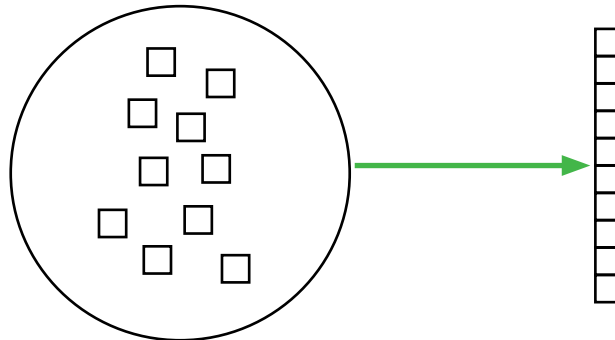
The symbol that tells you to add.

$$5 + 4 = 9$$

+ is the **plus sign**

regroup/trade/exchange

The process of exchanging 10 ones for 1 ten, 10 tens for 1 hundred, 10 hundreds for 1 thousand, etc.



sum

The result of adding two or more numbers or the total number when you combine sets.

$$7 + 2 + 1 = 10$$

10 is the sum

tens column

The column with digits in the tens place.

In the number 423, 2 is the in the tens column.

together

To combine sets or numbers.

