

Curriculum Based Assessment (CBA)

Directions and Materials

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About this manual

This manual was prepared by Seth Aldrich, Ph.D. and Jim Wright. Dr. Aldrich is a Bilingual School Psychologist for Syracuse City Schools and New York State licensed psychologist. Jim Wright is a school psychologist who coordinates the Syracuse City Schools School Based Intervention Team (SBIT) project. The manual is intended to provide educators with directions, guidelines and some materials for conducting Curriculum Based Assessment (CBA). It is not intended to provide the training necessary to become proficient at conducting, scoring, interpreting and or using CBA for school based decision-making. While CBA is not difficult to learn, inservice as well as the references listed below are recommended so that educators can take full advantage of the information that CBA has to offer.

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Table of Contents

An overview of Curriculum Based Assessment	5
Qualities of CBA.....	8
Purposes of CBA.....	8
Advantages of using CBA	9
Preparing CBA probes	10
References	11
Standard directions for conducting CBA in Spanish	
<u>Reading Assessment</u>	
Reading passages directions	13
Letter reading directions	14
Letter sounds directions	14
Word lists directions	15
<u>Writing Assessment</u>	
Writing directions	16
Story Starters for writing assessment.....	17
<u>Math Assessment</u>	
Math directions	18
Guidelines for conducting, scoring and interpreting CBA	
Scoring guidelines for CBA reading	21
Recording reading behaviors	22
Guidelines for frustration, instructional and mastery levels	23
Information recording materials	
<u>Reading</u>	
Survey Level Assessment Summary Data Recording Sheet	25
Progress Monitoring Data Recording Sheet	26
Word list form 1	27
Word list form 2	28
Graph for reading results	29
Graph for letter name/sound results	30
<u>Written Expression</u>	
Comprehensive writing assessment recording sheet	31
‘Checking My Story’ - Student self-assessment checklist	32
Cover Copy Compare Word List A	33
Cover Copy Compare Word List B	34
Writing graph.....	35

Math

Math recording sheet 36
Graphs for math results 37

Case Studies

Case example 1: Survey level assessment and ongoing monitoring 39
Case example 2: Use of local norms to identify students with “special needs” 42
Case Example 3: The new student 44

Reading/math materials

Randomly arranged letter probes (5 probes)..... 47
Addition/subtraction (sums to 10) 52
Addition/subtraction (sums to 20) 60
Single digit multiplication facts (1 - 10) 74
Double digit addition subtraction (no regrouping) 80
Double digit addition subtraction (with regrouping) 86
Double digit multiplication 92

Curriculum Based Assessment: A Brief Overview

Curriculum Based Assessment (CBA) is a method of systematically assessing students' basic academic skills in reading, mathematics, spelling and written expression. The instructor gives the student brief, timed samples, or "probes", made up of academic material usually taken from the student's curriculum.

CBA in Reading may consist of letter/letter sound reading, word lists and or passage reading, depending on the student's developmental level or instructional goals. Students are asked to read from letter lists, word lists or reading passages called "probes" for one minute. Students who are beyond an emergent level typically read three passages of text per grade level, and the median, or middle score is recorded. Multiple passages within a single book level are prepared so that ongoing assessment can take place without practice effects.

CBA in Writing consists of a three-minute writing sample with a story starter. There are many scoring options including counting the number of, and percent correctly spelled words in three minutes. Qualitative scoring options are provided in this manual.

CBA Math uses two-minute calculation probes. Probes, which may be comprised of a single skill or "mixed skills", are selected to assess key skills from the student's current or imminent instructional program.

Different ways of collecting and using CBA information

Survey level assessments use probes from a variety of levels to obtain a measure of a student's current skills at each level through determining levels of instructional material used in the student's classroom that:

- have been mastered (mastery level material)
- are appropriately challenging (instructional level material)
- are considered too challenging (frustrational level material)*

*Criteria used for mastery, instructional and frustration levels is provided on page 23 of this manual.

The CBA survey level assessment is useful for determining instructional materials in reading and math that match individual students' skill levels. Instructional match is defined here as the degree to which materials are appropriately challenging (neither too difficult nor too easy) for an individual student. Appropriate instructional match is crucial for students who are developing basic academic skills for the following reasons:

- Placement in materials that have already been mastered may keep students from "moving on" and achieving their full potential.
- Placement in materials that are too difficult reduces opportunities for practicing emerging skills. Students may actually practice computing math facts or reading words incorrectly.
- Materials that are too challenging are difficult for students to comprehend or apply. Application of skills and or development of comprehension skills may be impeded when materials are at a frustration level.
- Placement in materials that are too difficult may reduce motivation and increase

chances of behavior problems.

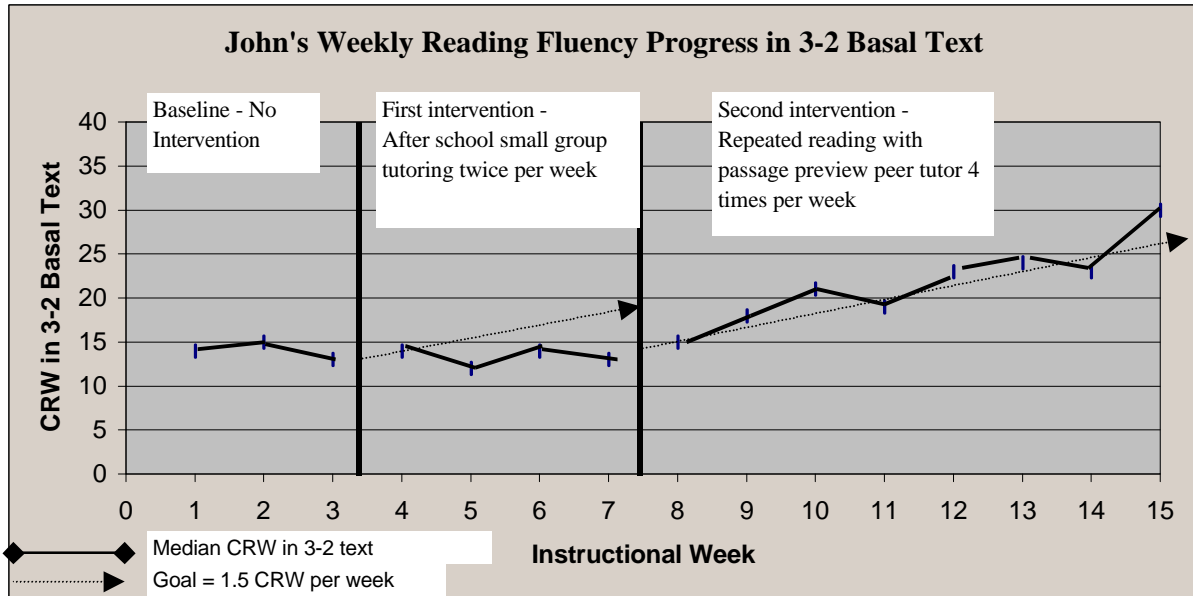
The tables below provide examples of information collected from a CBA survey level assessment in reading and math. In the first example, the student reads very well in first and second grade material. The student reads disfluently (less than 35 words per minute) and inaccurately (less than 85% correct) in third grade material. The survey level assessment in reading suggests that the student should be instructed in second grade material and monitored in third grade level material. Teachers and support staff can use information collected during the survey assessment as a baseline when choosing to monitor student performance. Once the student becomes solidly “instructional” at a third grade level, he may be accelerated into that level of text.

Reading level	Correctly read words (CRW)	Percent correctly read words	Proficiency level
End of first	60	95%	Mastery
Second (2-1)	48	85%	Instructional
Second (2-2)	45	88%	Instructional
Third (3-1)	30	75%	Frustration

Survey level assessment in math uses probes containing a specified skill or skills to assess the number and percent of digits the student computes correctly in two minutes. A general rule of thumb is that students should be able to perform with at least 85% success on math probes before independent practice is advised. While this form of CBA math assessment does not assess application skills, it does assess prerequisite skills (that are frequently deficient for struggling students) necessary for students to apply math skills to solve real life problems.

Math skill	Correct Digits (CD)	Percent correct Digits	Proficiency level
Addition sums to 10 (single skill)	30	95%	Mastery
Double digit addition and subtraction (no regrouping – multiple skill)	48	85%	Instructional
Double digit addition and subtraction (with regrouping – multiple skill)	10	68%	Frustration
Single digit multiplication (single skill)	15	75%	Frustration

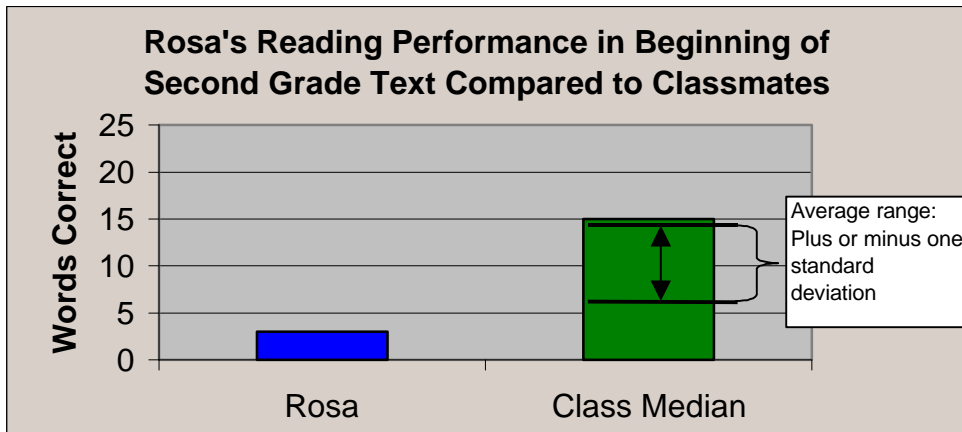
CBA monitoring is useful for evaluating curriculum, interventions and or programs that are most effective for students. Educators can use ongoing (usually weekly) assessment, using probes from a single level, to gain information concerning student academic growth in response to various instructional approaches and or interventions. Since CBA probes are given under standardized conditions, they allow direct comparison of individual students’ performances over time (see graph below).



*The dotted lines represent goal level progress of 1.5 CRW per week. The intervention was changed at week 7 after three consecutive data points fell below the goal line.

Each point on the graph represents the middle of three one minute reading probes given on a weekly basis. The graph shows the student on a frustration level at baseline (weeks one through three). After week three, a goal was established with an expected progress rate of 1.5 correctly read words gain per week. The dotted line on the graph represents this rate of progress. At week seven, it was decided that the intervention is not producing the desired outcome and another intervention is put into place (passage preview and repeated reading strategies with a peer tutor). CBA monitoring shows gains subsequent to the peer tutoring intervention to be at or above goal level expectations. Without frequent ongoing assessment and graphing of data, it would have been very difficult to determine which intervention was having a significant positive impact on the student within such a short period of time.

Curriculum Based Measurement (CBM) uses CBA information collected on groups of students from a classroom or school to compare individual students to a **'local norm'**. By assessing both typical and at risk students using CBA procedures, educators can identify students who because of their current skills in classroom materials require substantial modification or intervention. This information is relevant to decisions concerning least restrictive environment. In some states, educators use CBM for high stakes decisions such as program eligibility.



The graph above shows how Rosa’s reading fluency in grade level text differs significantly from the median performance in the class (performance of the “middle student”). Rosa’s performance suggests that she needs more assistance than her “typical” classmates. Collecting classwide information also helps the classroom teacher and support staff to identify other students in the class who are having difficulties, as well as to become aware of the range of skill levels in his or her class.

Qualities of CBA

The following qualities make CBA a unique form of assessment that can be used for many types of educational decisions:

- CBA can be administered frequently for ongoing formative evaluation.
- CBA is sensitive to relatively small changes in short periods of time.
- Research has shown CBA to have good measurement properties (reliable, valid).
- CBA is scored objectively.
- CBA can have curriculum overlap/relevance.
- CBA provides information that is useful for identifying students’ instructional needs.
- CBA is practical to administer (considering cost and teacher time).
- CBA can be norm referenced (using local norms).

Purposes for using CBA

Because of its many positive assessment qualities, CBA can be used for a wide variety of educational decisions from instructional decisions about individual students in regular education to more high stakes decisions such as program evaluation and program eligibility. Below is a list of the various types of decisions that can be made using CBA procedures and the type of assessment (inventory and or progress monitoring) that would be used to make such a decision.

- Identify instructional needs of students through analysis of reading behaviors (inventory and or progress monitoring).
- Match instructional materials with the student's instructional level so that the student has optimal challenge and frequent opportunities for success (inventory and or progress monitoring).

- Evaluate the effectiveness of instructional interventions. CBA can be used to determine whether or not interventions are being effective in helping students to achieve predetermined goals. Interventions can be modified until students begin achieving goals as determined by CBA data (progress monitoring).
- Evaluate educational programs. Groups of students involved in educational programs to improve basic academic skills can be monitored using CBA. The resulting information can be used formatively to modify programs in order to be more effective or summatively to judge whether or not a program is effective (progress monitoring).
- Decide on program eligibility. CBA can be used to identify students for whom various modifications and interventions have not resulted in adequate improvement. Such resistance to intervention has been used to document the need for more intensive instructional programs such as Special Education (progress monitoring). Curriculum Based Measurement (CBM) is a process in which local norms are collected to identify students who are discrepant from peers receiving similar instruction. CBM has also been used to identify students needing additional intervention such as special education services.

Summary: Advantages of using CBA over other academic measures

Most assessments used in classrooms (e.g. teacher made tests and work samples) provide 'snapshots' of student performance. It is difficult to compare a student's performance from one assessment to another because the conditions (i.e., time allocated, assistance provided and task difficulty) vary from time to time. Commercially available tests, while designed to be consistent, are time consuming, frequently do not adequately overlap what is taught, and are typically used for long term or 'summative' decisions.

CBA monitoring procedures, on the other hand, are feasible for ongoing or formative assessment since they take about five minutes to conduct. CBA typically uses materials from the student's curriculum and is administered in a standardized format so that a given student's performance is comparable from one assessment to another. The 'motion picture' that develops as the results of several assessments are plotted on a graph, reflects the student's progress in response to different instructional approaches or interventions. CBA probes also allow teachers to observe the nature of reading, math or writing strategies that the student uses, as well as errors in order to guide direct instruction.

Curriculum Based Assessment can be used to answer questions that commercially available assessments are not designed to address. For example, CBA is a very useful measure when identifying needs of assessment of students with limited English proficiency as well as deciding when curriculum changes need to be made.

Finally, CBA has a strong body of research to support its use for relatively high stakes decisions. If given repeatedly over time, CBA is a reliable, valid formative evaluation approach. Research has also shown that oral reading fluency and accuracy are highly correlated with a student's ability to comprehend that level of text.

Preparing Reading Passages for CBA

One of the major advantages of Curriculum Based Assessment (CBA) in reading is that assessment materials can be developed directly from what students are required to do in the classroom.

To prepare your own passages for CBA assessment, photocopy* or type passages. If stories are typed, pay attention to font and size so that it is similar to that of what the student is expected to read in class (younger students may read better when type is larger).

Example word count

- It is helpful when scoring CBA reading passages to have numbers corresponding with the total number of words in the story at the end of each line in the right hand margin. Student copies should have no numbers along the side of the page.

→ 9	(words in first line)
→ 18	(cumulative words)
→ 31	
→ 41	
→ 43	total words in section
- When preparing passages, consider how much target student minute. Passages should probably be at least 100 to 120 words in length. When collecting CBM norms with groups of very able readers, students may need even longer passages. When using passages only to assess younger readers with relatively weak skills, shorter passages may suffice (and may be necessary considering the short length of stories in early readers).
- It is recommended that passages not have a lot of dialogue, and should be from stories rather than poetry or plays. Text with unusual names or foreign words should be avoided if possible.
- If copying from text books pictures should be deleted. The reason for this is that with timed probes, a student's ability to read print independently is assessed. There is little time to stop and think about picture clues before beginning to read the story.

* Under the Fair Use Statute, copyright laws allow for limited portions of textbooks to be copied for educational purposes. Copyright information can be obtained on the website <<http://www.loc.gov/copyright/>>.

Preparing Math Probes for CBA

Math probes may be single skill (e.g., all addition problems with sums to 10) or mixed skill problems (e.g., addition and subtraction problems sums to 10). Problems should be distributed randomly with an even mix of easier and more difficult problems so that different probes are of similar difficulty.

Choose a skill level for monitoring that has not been mastered by the student(s) you are

interested in assessing. That way you can observe progress in skills that are developing. You may want to include “unknown” problems that will be instructed soon to assess acquisition of new skills.

While a limited number of math probes are provided with this manual, those who wish to conduct CBA in math are encouraged to obtain math probes from the website <www.interventioncentral.com>.

References

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Shapiro, E. (1996). Academic Skills Problems: Direct Assessment and Intervention. New York: Guilford Press.

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Wright, J. (1992). Curriculum-Based Measurement: A Manual for Teachers.

Standard Directions for Conducting CBA

Directions for CBA in Reading

Reading passages

"When I say "begin" I want you to begin reading aloud at the top of this page (point to the first word on the page). Try to read each word. If you come to a word you don't know I'll read it for you. Be sure to do your best reading. Do you have any questions?" (Pause) "Begin".

The examiner begins the stopwatch when the first word is read correctly by either the student or the examiner. If the student makes an error on the first word, or if the student does not read the initial word within three seconds, the examiner says the word and starts the stopwatch.

As the student reads along in the text, the examiner records any errors by marking a slash (/) through the incorrectly read word. The examiner reads words that the student reads incorrectly. If the student hesitates for more than three (3) seconds for any word, or if the student misreads a word, the examiner says the word and marks it as an error. (More information concerning scoring is provided later in this manual pg. 21) When students read so quickly that it is difficult to correct each error, it is acceptable to not interrupt the student's reading with corrections.

After 60 seconds, the examiner says **"Stop reading"** and marks a "/" after the last word that the student read.

Directions for CBA: Reading Readiness

Directions for letter naming

Give the student the list of randomly arranged letters, point to the first letter and say: **"I want you to name these letters. Begin here and read across the page. Try to name as many letters as you can. If you need help with a letter, I'll read it for you. Remember to do your best reading. Do you have any questions?"** (These directions should be given as consistently as possible without sounding stilted.) Begin timing as soon as the first letter is read. (If the student doesn't know the first letter, begin timing as soon as you say the letter.)

At the end of one minute, say **"Stop"**. Put a slash after the last letter read within one minute.

Directions for reading letter sounds

Give the student the list of randomly arranged letters, point to the first letter and say: **"I want you to tell me the sounds that these letters make. Begin here and read across the page. Try to say the sounds of as many letters as you can. If you need help with a letter, I'll read it for you. If a letter says more than one sound tell me all the sounds that the letter makes. Remember to do your best sounding out. Do you have any questions?"** (These directions should be given as consistently as possible without sounding stilted.) Begin timing as soon as the first letter is read. (If the student doesn't know the first letter, begin timing as soon as you say the letter sound.)

At the end of one minute, say **"Stop"**. Put a slash after the last letter read within one minute.

Scoring

Subtract the number of errors from the total number of letters 'covered' in one minute. These are the correctly read letters (CRL) and correctly read sounds (CRS).

For letter sounds, the total sounds read (TRS) is the number of letters covered. If a student reads more than one sound for a letter that makes more than one sound (a, e, i, o, u, y, c, g, s, x,) count multiple sounds when computing the TRS.

Directions for CBA in Reading

Word lists

"When I say "begin" I want you to begin reading the words on this page (point to the first word on the page). Try to read each word. If you come to a word you don't know I'll read it for you. Be sure to do your best reading. Do you have any questions?" (Pause) "Begin".

The examiner begins the stopwatch when the first word is read correctly by either the student or the examiner. If the student makes an error on the first word, or if the student does not read the initial word within three seconds, the examiner says the word and starts the stopwatch.

As the student reads down the list, the examiner records any errors by marking a slash (/) through the incorrectly read word. The examiner reads words that the student reads incorrectly*. If the student hesitates for more than three (3) seconds for any word, or if the student misreads a word, the examiner says the word and marks it as an error and directs the student to the next word on the list. When students read so quickly that it is difficult to correct each error, it is acceptable to not interrupt the student's reading with corrections.

After 60 seconds, the examiner says **"Stop reading"** and marks a "/" after the last word that the student read.

* Some authors do not provide error correction for misread words. Providing error correction for misread words is the standard procedure implemented in the Syracuse City School District based on teacher feedback about acceptable assessment practice. Decisions to modify CBA procedures must be applied conservatively and consistently.

Curriculum Based Assessment (CBA) in Writing Comprehensive Assessment Directions

Directions:

"I want you to write a story. I am going to read a sentence to you first, and then I want you to write about what happens. You will have one minute to think about the story you will write and then have three minutes to write it. Do your best work. If you don't know how to spell a word, you should guess. Are there any questions?"

"For the next minute think about:" (provide story starter*)

After 60 seconds say: **"Begin writing"**

After three minutes: **"Stop. Please put your pencils down."**

The teacher then collects the writing samples.

* Ideas for story starters are provided on the following page.

Quantitative scoring options include:

- 1) Counting the total words written (TWW) whether they are misspelled or not.
- 2) Counting the number of correctly spelled words (CSW) in the story and percentage of total words written that were spelled correctly (words are scored as correct whether or not they are grammatically correct).
- 3) Counting the number of correctly spelled words in the story and percentage of total words written that were spelled correctly (words are scored as incorrect if they are not grammatically correct).

Note: The important thing to remember is the teacher's instructional goals and that scoring methods are uniform across writing samples that are compared to monitor progress.

Qualitative scoring options:

Teacher evaluates writing sample using the CBA Writing Comprehensive Assessment Sheet (tailored for instructional goals).

Teacher and student evaluate writing sample using the CBA Writing Comprehensive Assessment Sheet (tailored for instructional goals) and the 'Checking My Story' sheet.

Optional activity: Self-assessment (after the 3 minute sample)

"Now you'll have 5 minutes to use the 'Checking my Story' sheet to check your story. Rate how you did today according to the rating sheet".

Student editing

"Look over the 'Checking my Story' sheet and use it to edit your story using a different colored pen. For example, you could change your story by adding words, changing words, or correcting spelling or punctuation. To change words, draw one line through the word and write the new word above the crossed out word."

Ideas for Story Starters

1. You just won the lottery for 20 million dollars. What would you do?
2. You woke up this morning and you were two (or ten) feet tall. Write a story about what you would do and what might happen.
3. You woke up this morning and you were could fly. Write a story about what you would do and what might happen.
4. You woke up this morning and you were invisible. Write a story about what you would do and what might happen.
5. A genie grants you three wishes. Write a story about what you would wish for and what might happen.
6. Write about the scariest (happiest) thing that ever happened to you.
7. Aliens have landed in your back yard. Write about what might happen.
8. You have just won an all expense paid vacation to anywhere in the world. Write about where you would go and what you would do.
9. You've invented a time machine and can go back in time. Write about where you would go and what might happen.
10. You've invented a time machine and can go forward into the future. Write about what it is like and what might happen.
11. You are made principal of the school. Write about what you would do and what might happen.
12. You President of the United States. Write about what you would do and what might happen.
13. Write about what you would like to be doing in 20 years.
14. What if you could change anything about yourself? Write about what you would change and how your life would be different.

Directions for CBA in Math

1) Math sheets are distributed to students face down on their desks. Students are asked to put their name on the paper before beginning.

2) Provide these instructions to students:

Single skill probes: "**The sheets on your desk are math facts. All of the problems are** (state the type of math problem on the sheet e.g., addition)".

Multiple skill probes: "**The sheets on your desk are math facts. There are several types of problems on the sheets. Some are** (state the types of math problem on the sheet e.g., addition and some are subtraction). **Look at each problem carefully before you answer it**".

For all problems: "**When I say begin, start answering the problems. Begin with the first problem and work across the page** (demonstrate by pointing). **Then go down to the next row. If you cannot answer a problem mark an x on it and go to the next one. Are there any questions?**"

3) Say "**Begin**" and start timing.

4) Watch students to make sure that they are working across the page and that they are not skipping problems.

5) At the end of two minutes, say "**Stop. Please put your pencils down.**"

Math probes

Probes should be designed to cover skills currently targeted in the classroom instruction or review skills (depending on what the instructor wants to know about a student's skills. Problems on math sheets should be randomly arranged and of equal difficulty. Several math probes are included in this materials manual. Math probes may also be generated on the following website:

www.interventioncentral.com.

Scoring

The total number of digits attempted are counted. For example:

$$\begin{array}{r} 54 \\ +35 \\ \hline 88 \end{array} \quad \begin{array}{r} 31 \\ -10 \\ \hline 21 \end{array} \quad \begin{array}{r} 47 \\ +22 \\ \hline 29 \end{array}$$

6 (The number '6' indicates all possible digits for that line.)

The total **attempted** = 6 (This is the number of digits had the problems been computed correctly).

Errors = 2 (these are the digits that are underlined).

Total digits **correct** = 4

Percent digits correct in two minutes = $4/6$ or 67%

Note: By computing correct digits CBA math is more sensitive to small change over relatively short periods of time.

Guidelines for Conducting, Scoring and Interpreting CBA

CBA Reading: What Are/ Aren't Counted as Errors

As the student reads, the examiner carefully records errors that the student makes as well as other observations concerning the way the student reads.

The following are counted as student errors when scoring CBA:

- 1) Hesitating for more than 3 seconds between words
- 2) Misreading words (i.e., reading bat as "bet")
- 3) Omitting words
- 4) Skipping a line (redirect the student to the missed line and count as **one** error)

The following are not counted as student errors when scoring CBA:

- 1) Words that the student corrects for him or herself within 3 seconds.
- 2) Words that are inserted (reading I saw a dog as "I saw a big dog") before the examiner has a chance to correct the student.
- 3) Mispronunciations of words because of articulation differences that the student may have (i.e., the student reads rabbit as "wabbit").
- 4) Different pronunciations of words due to non-standard English (e.g. some Latino students may delete the final 's' sound in words).

Guidelines for Recording Student Reading Behaviors


Stare
~~Store~~

Misreads – Mark a slash through words that are misread (e.g., the student reads store as “stop”) and write what the student reads over the word. (Count as one error.)

~~Store~~

Hesitations – If the student does not read anything within 3 seconds, mark a slash through the word. (Count as one error.)

I went to the
store to buy
some milk, but
when I got there



Skipped lines – If the student skips a line, re-direct the student to the correct line and mark the error by putting an arrow at the corresponding lines. (Count as one error.)

I went to ~~the~~ store
to buy some milk

Omissions – If the student skips a word (“I went to store” in this example), put an “x” through the omitted word. (Count as one error.)

He won on his ^{very} first
try.

Insertions – If the student inserts a word that is not in the passage and continues to read the following word correctly, it is considered an insertion. The examiner may write the word where it was inserted with an inverted “v”. (No error is scored.)

SC
wane
He ~~won~~ on his

Self-corrections – If a student misreads a word but then corrects him/herself within three seconds, sc may be used to indicate the self-correction. (No error is scored.)

“He wan as fa as he
could”
He ran as far as
he could.

Misarticulations/ Mispronunciations – If a student exhibits a consistent pattern of misarticulation or reads words differently because they speak with an accent or non standard English, you may want to note the pattern by noting a few examples. (No error is scored.)

Note: Recording these reading behaviors is optional when conducting CBA. Resulting information may be used to identify students’ instructional needs. Accurate administration and scoring procedures should not be compromised when recording the nature of student errors.

Reading: Guidelines for frustration, instructional and mastery levels

Grade 1 through grade 3 text*

	<u>Fluency</u>	<u>Accuracy</u>
Frustration	Below 35 CRW**	Below 85% accuracy
Instructional	35 - 60 CRW	85 - 95% accuracy
Mastery	Above - 60 CRW	Above 95% accuracy

Grade 4 through grade 6 text

	<u>Fluency</u>	<u>Accuracy</u>
Frustration	Below 50 CRW	Below 85% accuracy
Instructional	50 - 100 CRW	85 - 95% accuracy
Mastery	Above 100 CRW	Above 95% accuracy

* Guidelines for frustration, instructional and mastery levels of fluency vary in the literature. Fluency rates corresponding with functional Spanish reading are unknown.

**CRW - Median correctly read words in one minute out of three readings

Math: Guidelines for frustration, instructional and mastery levels

Grade 1 through grade 3 problems*

	<u>Fluency</u>	<u>Accuracy</u>
Frustration	0-9 CD	Below 85% accuracy
Instructional	10-19 CD	85 - 95% accuracy
Mastery	20+ CD	Above 95% accuracy

Grade 4 and above problems

	<u>Fluency</u>	<u>Accuracy</u>
Frustration	0-19 CD	Below 85% accuracy
Instructional	20-39 CD	85 - 95% accuracy
Mastery	40+ CD	Above 95% accuracy

CD- Correct digits computed in two minutes

*Math guidelines are adapted from Shapiro (1996)

Information Recording Materials

Survey Level Assessment Summary

Student _____

TRW - Total read words E - Errors CRW - Correctly read words

$$\% \text{ CRW} = \frac{\text{Median CRW}}{\text{Median CRW} + \text{Median E}}$$

Date _____

Notes

Book (level) _____

Reading 1: TRW ___ E ___ CRW ___

Reading 2: TRW ___ E ___ CRW ___

Reading 3: TRW ___ E ___ CRW ___

Median CRW ___ **E** ___ **% CRW** ___

Book (level) _____

Reading 1: TRW ___ E ___ CRW ___

Reading 2: TRW ___ E ___ CRW ___

Reading 3: TRW ___ E ___ CRW ___

Median CRW ___ **E** ___ **% CRW** ___

Book (level) _____

Reading 1: TRW ___ E ___ CRW ___

Reading 2: TRW ___ E ___ CRW ___

Reading 3: TRW ___ E ___ CRW ___

Median CRW ___ **E** ___ **% CRW** ___

Book (level) _____

Reading 1: TRW ___ E ___ CRW ___

Reading 2: TRW ___ E ___ CRW ___

Reading 3: TRW ___ E ___ CRW ___

Median CRW ___ **E** ___ **% CRW** ___

Book (level) _____

Reading 1: TRW ___ E ___ CRW ___

Reading 2: TRW ___ E ___ CRW ___

Reading 3: TRW ___ E ___ CRW ___

Median CRW ___ **E** ___ **% CRW** ___

Frustration level(s) _____

Instructional level(s) _____

Mastery level(s) _____

Progress Monitoring Data Recording Sheet

Student _____ Book (level) _____
 TRW - Total read words E - Errors CRW - Correctly read words % CRW = $\frac{\text{Median CRW}}{\text{Median CRW} + \text{Median E}}$

Date _____	<u>Notes</u>
Reading 1: TRW ___ E ___ CRW ___	
Reading 2: TRW ___ E ___ CRW ___	
Reading 3: TRW ___ E ___ CRW ___	
Median CRW _____ E _____ % CRW _____	
<u>Words misread</u>	<u>Read as:</u>
1)	4)
2)	5)
3)	6)

Date _____	<u>Notes</u>
Reading 1: TRW ___ E ___ CRW ___	
Reading 2: TRW ___ E ___ CRW ___	
Reading 3: TRW ___ E ___ CRW ___	
Median CRW _____ E _____ % CRW _____	
<u>Words misread</u>	<u>Read as:</u>
1)	4)
2)	5)
3)	6)

Date _____	<u>Notes</u>
Reading 1: TRW ___ E ___ CRW ___	
Reading 2: TRW ___ E ___ CRW ___	
Reading 3: TRW ___ E ___ CRW ___	
Median CRW _____ E _____ % CRW _____	
<u>Words misread</u>	<u>Read as:</u>
1)	4)
2)	5)
3)	6)

Date _____	<u>Notes</u>
Reading 1: TRW ___ E ___ CRW ___	
Reading 2: TRW ___ E ___ CRW ___	
Reading 3: TRW ___ E ___ CRW ___	
Median CRW _____ E _____ % CRW _____	
<u>Words misread</u>	<u>Read as:</u>
1)	4)
2)	5)
3)	6)

CBA Word Drill List

Directions for Word Drill: Write down selected words that were misread in the CBA passage. Point to each word and ask the student to read it. If the student reads the word incorrectly read the word and have the student repeat the word twice. Repeat the procedure until the student reads all of the words with 100% accuracy.

1)

2)

3)

4)

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9)

10)

CBA Word Drill List

Directions for Word Drill: Write down selected words that were misread in the CBA passage. Point to each word and ask the student to read it. If the student reads the word incorrectly read the word and have the student repeat the word twice. Repeat the procedure until the student reads all of the words with 100% accuracy.

1)

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4)

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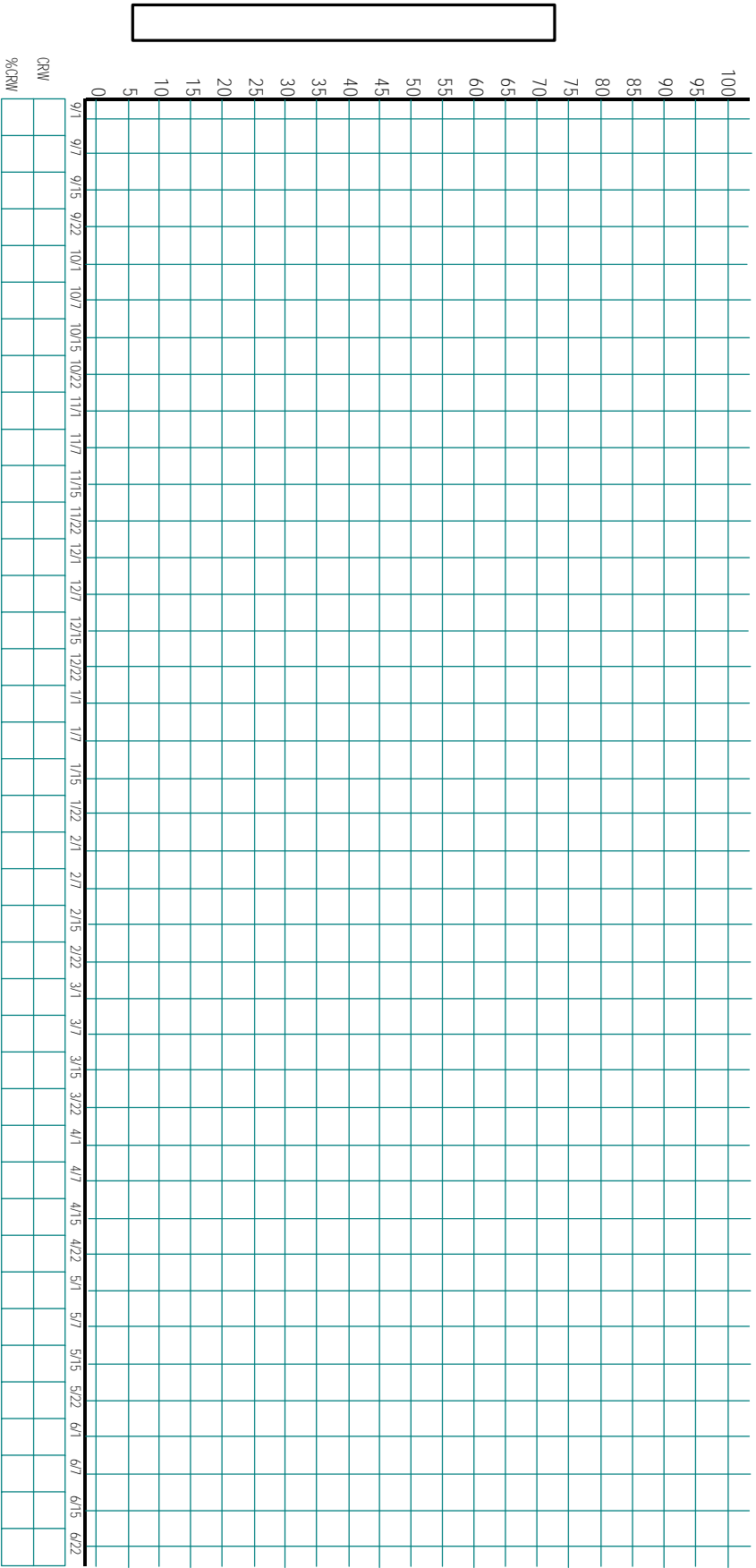
19)

20)

Describe interventions here →

Curriculum Based Assessment Graph
Student: _____

Reading

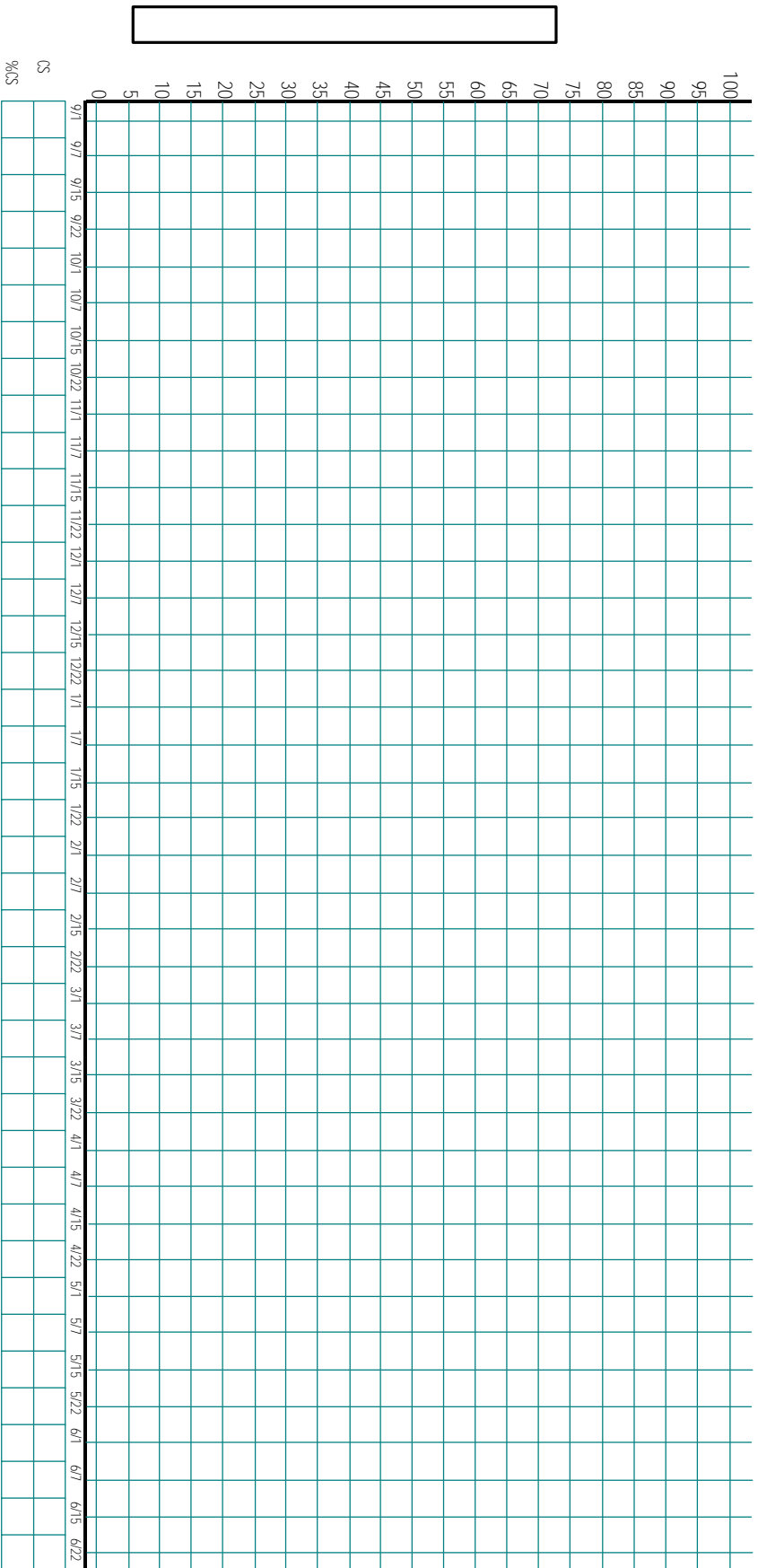


Describe interventions here →

Curriculum Based Assessment Graph

Student: _____

Sounds



Curriculum Based Assessment - Writing

(Comprehensive Assessment Sheet)

Writing the Story

Spelling

- _____ Total Words Written
- _____ Correctly Spelled Words
- _____ Percent Correctly Spelled Words

Mechanics (rate the mechanics by the following criteria)

1	2	3
Incorrect or very infrequent use	Inconsistent use	Correct, consistent use

- _____ Capitals
- _____ " " Quotations
- _____ . Period
- _____ : or ; colon/semi-colon
- _____ , Comma
- _____ ' (apostrophe for contraction - i.e., can't)
- _____ ! Exclamation mark
- _____ ' (apostrophe for possession - i.e., Mary's)
- _____ ? Question mark

Quality of Writing - The story:

<u>Student</u>	<u>Teacher ratings</u>	
_____	_____	has a title.
_____	_____	is consistent with the title.
_____	_____	has a good leading sentence.
_____	_____	has (no, few, many) omitted words (comments: _____).
_____	_____	has (no, few, many) grammatical errors (comments: _____).
_____	_____	has (no, few, many) capital letter errors (comments: _____).
_____	_____	has (no, few, many) run on sentences (comments: _____).
_____	_____	has (no, few, many) incomplete sentences (comments: _____).
_____	_____	has (many, few, no) descriptive words (comments: _____).
_____	_____	communicates the writer's thoughts clearly.
_____	_____	communicates the writer's thoughts in an organized manner.
_____	_____	is interesting to the reader.
_____	_____	has good ending sentence.
_____	_____	is an example of the student's personal best.

*Add/delete/modify the above descriptors according to student objectives

Checking My Story

Name _____

Date _____

- 1) Did I use my map? _____
- 2) Did I give my story a title? _____
- 3) Does my title tell about the story? _____
- 4) Did I write a good lead sentence? _____
- 5) Does my story have a plot? _____
- 6) Did I separate my words? _____
- 7) Did I write in complete sentences (not
begin sentences with 'then' 'and' or 'so') ? _____
- 8) Did I leave out any words? _____
- 9) Did I correct grammatical errors? _____
- 10) Did I correct spelling errors? _____
- 11) Did I correct capitals letters where needed? _____
- 12) Did I add punctuation marks where needed? _____
- 13) Did I use descriptive words? _____
- 14) Does my story have a good ending sentence? _____
- 15) Did I do my personal best? _____

* add/delete/modify these descriptors according to student objectives

Cover Copy Compare Word List

Directions for Cover Copy Compare: 1) Write down selected words that you want the student to be able to spell. 2) Instruct the student to look at the word and memorize it using whatever strategy will be effective. 3) Provide the student with an index card to cover each word. 4) Cover the word and then ask the student to write the word from his or her own memory. 5) Uncover the word and compare the student's response with the correct spelling. 6) Correct any errors and repeat until the student spells each word from memory with 100% accuracy.

1)

2)

3)

4)

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9)

10)

Cover Copy Compare Word List

Directions for Cover Copy Compare: 1) Write down selected words that you want the student to be able to spell. 2) Instruct the student to look at the word and memorize it using whatever strategy will be effective. 3) Provide the student with an index card to cover each word. 4) Cover the word and then ask the student to write the word from his or her own memory. 5) Uncover the word and compare the student's response with the correct spelling. 6) Correct any errors and repeat until the student spells each word from memory with 100% accuracy.

1)

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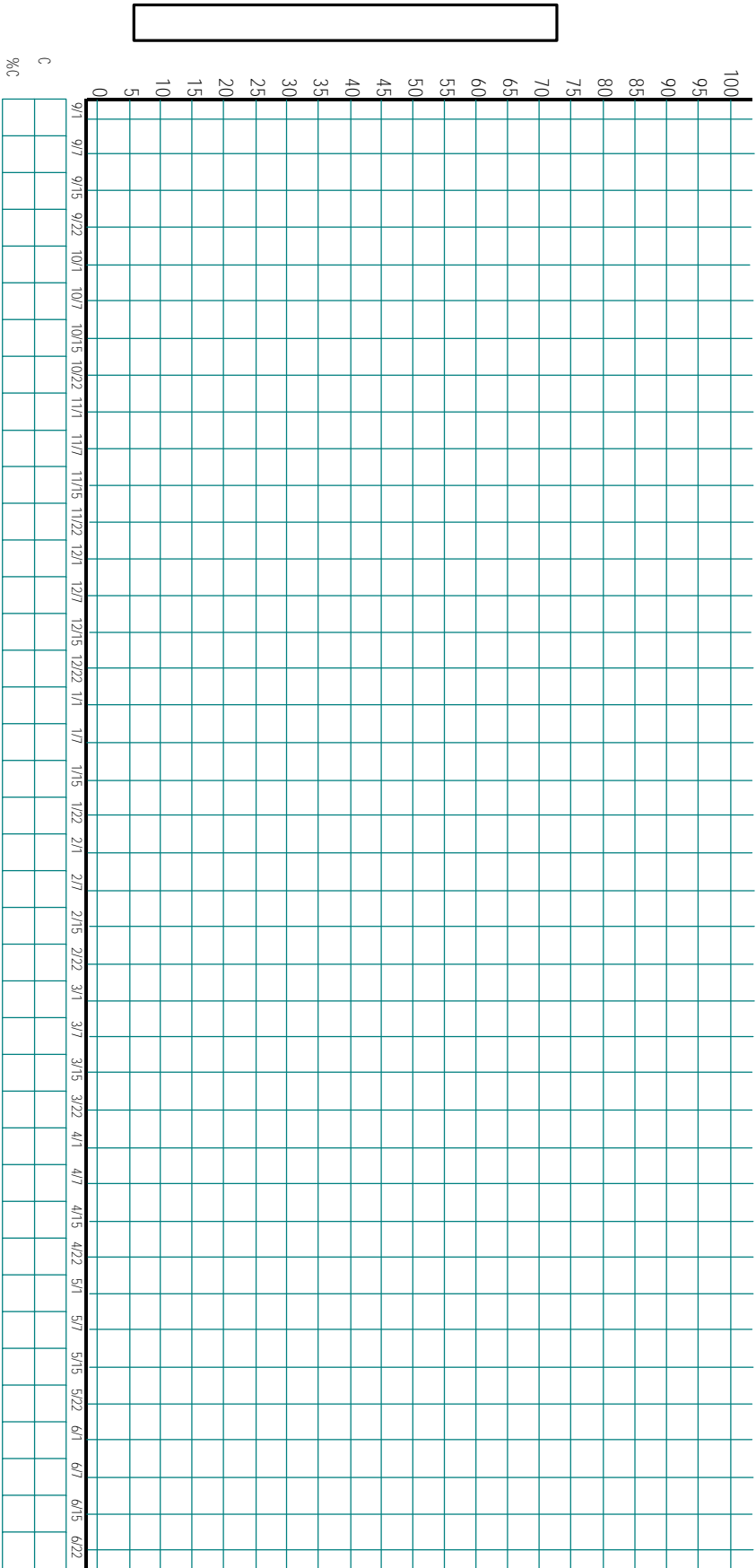
15)

Describe interventions here →

Curriculum Based Assessment Graph

Student: _____

Writing



Case Studies

Case example 1: Survey level assessment and ongoing monitoring

The following example illustrates how CBA can be used to survey students' skills in classroom materials and then monitor individual student progress through weekly reading probes. First, CBA **survey level assessment** of the student's skills at various levels was collected to provide information about book levels that were too easy (mastery), too hard (frustration) and appropriately challenging (instructional). Based on this information, the student's teacher was able to determine which instructional materials would set the student up for success.

CBA **monitoring** provided information concerning the effectiveness of the instructional strategies, interventions and or programs being used to promote academic skills. The main question addressed by CBA monitoring is "How well is this particular approach working for the student?"

Background

Michael is a nine year old boy attending Smith Elementary School in the third grade. While Michael's behavior, motivation and attendance are currently good, they were very problematic during first and second grade. Michael was retained in second grade. His current teacher estimated his reading level to be at a mid-second grade level and her lowest reading group, which includes Michael, uses an end of second grade textbook. She feels that Michael has the capability of learning but is behind due to his past troubles and is having difficulty "catching up" to his classmates.

Michael was referred to his school's pre-referral intervention team because his teacher was concerned about his reading skills. While he was making progress in reading, his reading delays made many aspects of the school day, including content areas, a struggle for him.

After reviewing Michael's educational history, it was clear that his history of attendance and limited motivation were key issues contributing to Michael's difficulties.

Step 1: Survey level assessment

The school psychologist in Michael's school conducted a CBA survey level assessment that inventoried Michael's skills at different grade levels. She asked Michael to read three randomly selected passages from the end of first, beginning of second, end of second and third grade textbooks used in his classroom. She found that, in the end of second grade book used in Michael's reading group, Michael was reading on average only 30 words correctly in one minute, with 75% accuracy. At this level Michael would probably not be able to practice enough known words when reading independently to improve his reading skills. Michael was able to read at an instructional level in the beginning of second grade basal (45 words correctly in one minute with 89% accuracy). Michael was at mastery level fluency and accuracy in the end of first grade book (see table below).

Michael's CBA Reading Survey Level Assessment Results

Reading level	Correctly read words (CRW)	Percent correctly read words	Proficiency level
End of first	75	96%	Mastery
Second (2-1)	45	89%	Instructional
Second (2-2)	30	75%	Frustration
Third (3-1)	13	60%	Frustration

Because Michael's current reading book was so difficult for him, he probably would find it difficult to comprehend what he was reading. Furthermore, he would be at risk for low motivation and behavior problems given the high degree of frustration if not given substantial support in current instructional materials.

Step 2: Set a goal

Michael's teacher and the pre-referral intervention team used the survey level; assessment information to set a realistic but ambitious goal for Michael to improve his reading fluency and accuracy:

"After four weeks of flash cards drill with the teacher Michael will increase his reading fluency in the third grade textbook by 6 words (1.5 CRW increase per week)".

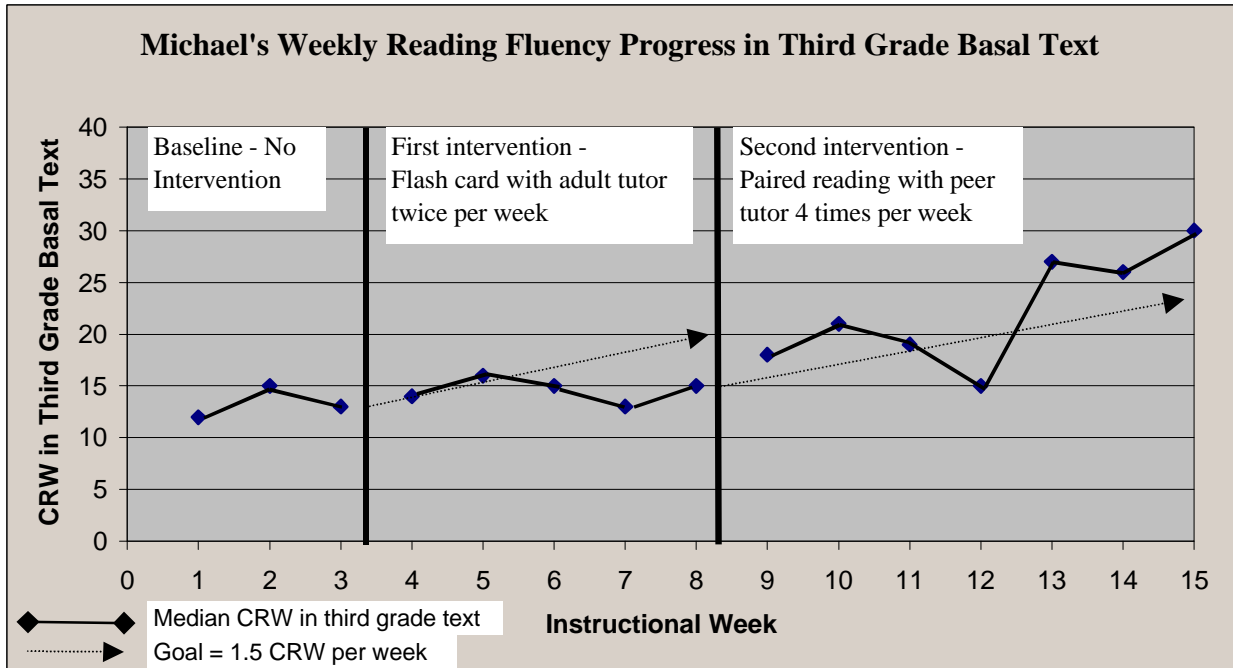
Step 3: Plan an intervention

Rather than move Michael out of his current reading group and into an easier book (which may have been an appropriate modification based on the survey level assessment), his teacher decided that she would provide interventions to make the end of second grade text easier for Michael through preparatory activities. She would do this initially by having a teacher assistant in the school tutor Michael using flash cards with difficult words from his reading book.

Step 4: CBA monitoring

The intervention team along with Michael's teacher decided that their goal was for Michael to read fluently and accurately in the third grade book. The teacher assistant conducting the flash card intervention would be trained to administer CBA on a weekly basis to monitor Michael's progress. Each week Michael would read from three different randomly selected passages from the third grade book. The TA would then graph the median (or middle score out of three) correctly read words (CRW) per minute and percent accuracy that Michael achieved each week. The goal, interventions attempted, and results would be shared with Michael and his parents.

The graph below shows the goal line reflecting expected progress, interventions used, as well as actual progress made (reflected by fluency in third grade materials) with each intervention.



Step 5: Evaluate intervention effectiveness and make necessary modifications

After five weeks of the initial intervention, Michael’s teacher and the intervention team decided that Michael was not meeting his goal (see graph). They decided to train an older student to be Michael’s tutor. Michael and the tutor would spend 25 minutes, four days per week reading from the second grade basal which was being used for instruction in Michael’s classroom. The goal of 1.5 words per week gain would be kept the same.

Step 6: Continue to assess and re-evaluate effectiveness

Throughout six weeks of the peer tutoring intervention, Michael demonstrated reading gains that were at or above his goal. The degree of improvement was such that Michael was projected to be reading instructionally in third grade material before the end of the school year. While his reading skills would still be delayed compared to other nine year olds, he was “catching up”.

Case example 2: Use of local norms to identify students with “special needs”

Educators have a responsibility of identifying students with special needs. Knowing what to expect of groups of students whose difficulties may be explained by factors not related to educational disability (e.g., students with limited English proficiency, and curriculum casualties) is a difficult task.

Collection of local norms through Curriculum Based Measures (CBM) is very useful for determining expected levels of skills and or progress of students who have problematic educational backgrounds. The purpose of standardization samples is to help educators know what to expect from students from similar backgrounds at a particular age/grade level. Collecting ‘local norms’ using CBM procedures allows educators to compare the academic skills of referred students to students who have had similar language histories and or educational experiences.

Background

Maria is an eight year old girl finishing the second grade in a classroom that includes several students who have limited English proficiency. Maria was born in Puerto Rico and did not begin speaking English until she entered kindergarten when she was five years old. Her parents and teacher are concerned that Maria struggles when she reads books estimated to be at a first grade level. Maria decodes many of her words and does not demonstrate a fluent sight word vocabulary. Her teacher feels that the energy she devotes to decoding interferes with her reading comprehension. They are concerned that Maria may have a learning disability.

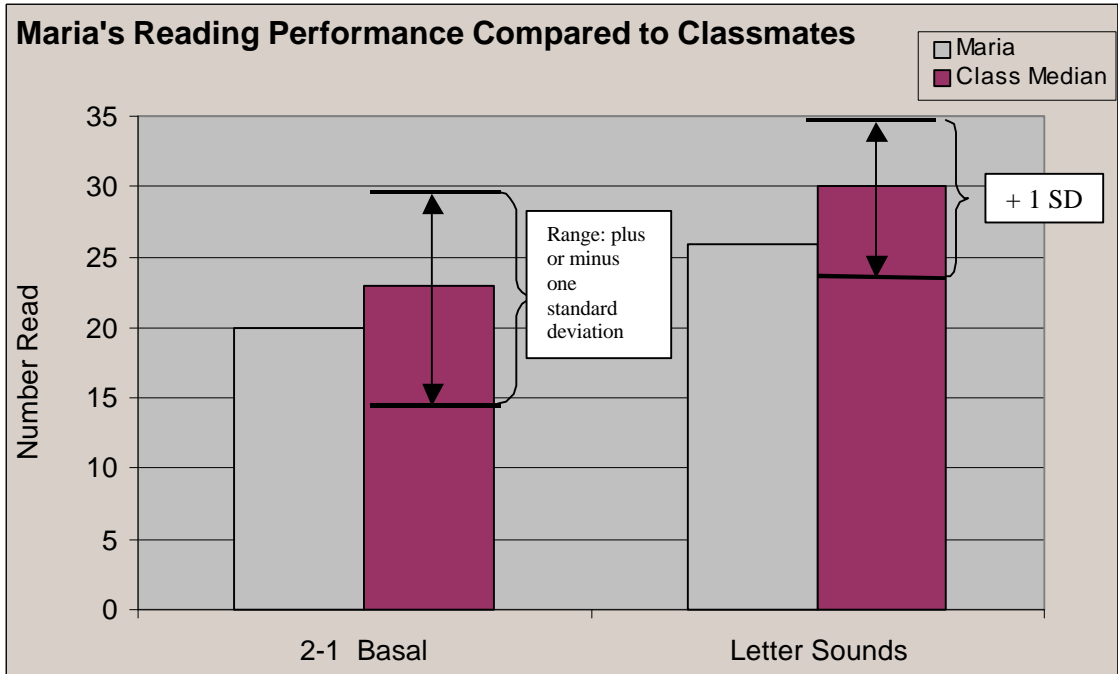
Step 1. Assess what the student is able to do compared to “typical students”

Several of Maria’s classmates have a similar language and instructional history. Maria’s teacher identified students in her class that had similar histories and randomly selected five of them to establish a “local norm”. She administered three CBA probes from the second grade book that she was using for instruction in her class (making sure to not use passages that students had already read). She also administered a page of randomly arranged letters to assess fluency in letter naming and sounding out. Maria’s teacher had significant concerns about another student in her class, Anna, and decided to conduct CBA assessment with her as well.

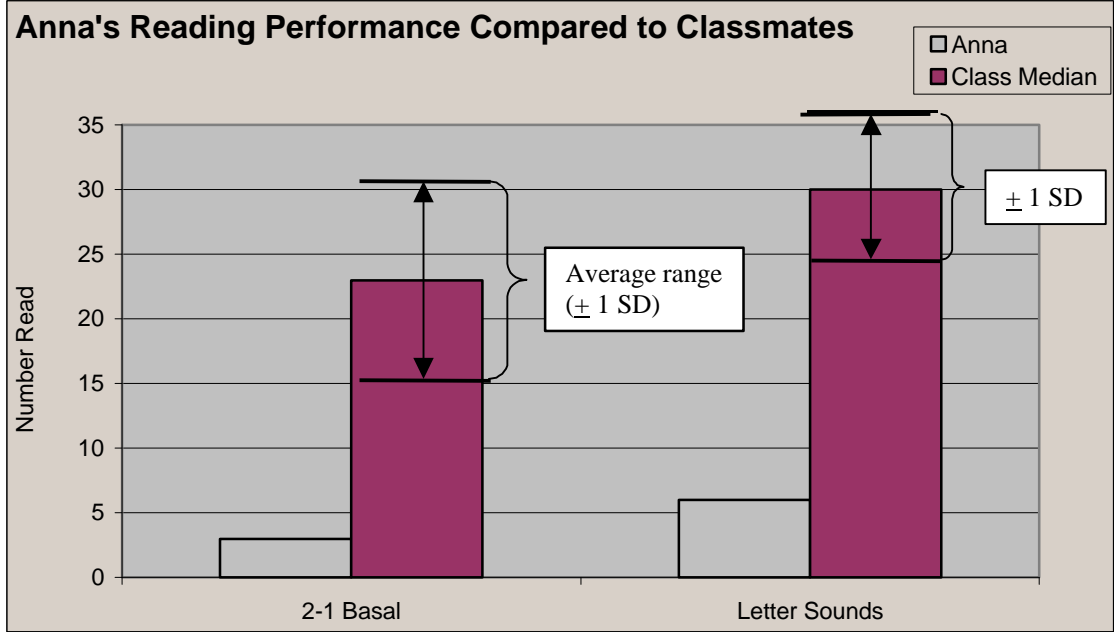
Step 2. Decide whether the student exhibits significant weaknesses relative to classmates

Results of the assessment revealed that Maria’s performance was not significantly different from that of her Spanish speaking classmates. Furthermore, her teacher was able to see that many students in her class were struggling in the class materials and that they needed additional support and practice before they could read independently at that level. Maria and five other students had not yet mastered the basic phonetic skills needed to decode English words. Vowel sounds were particularly difficult for Maria and other students assessed. This would be a target for direct instruction.

The graph below illustrates that Maria’s reading fluency is similar to the median performance of the students she assessed. Maria’s performance on both assessments is within one standard deviation of the average performance of her classmates. In other words, her performance is not “atypical” for her class. Informal analysis of the data reveals that five other students performed similar to Maria on the reading tasks.



Anna, on the other hand, exhibited basic reading skills that were very discrepant from other students in the classroom (see graph below). Her performance suggests that without significant intervention in reading she will continue to experience difficulties in language arts. Her teacher consulted with the building's intervention committee to design an individualized intervention and monitoring plan for Anna. Ongoing CBA monitoring would be used to evaluate her progress. Lack of progress would indicate the need for a more thorough evaluation to investigate the presence of an educational disability. CBA information would provide substantial evidence for or against the presence of a disability, as well as the nature of intervention required to address Anna's needs.



Case Example 3: The new student

Background

Joe is an eight year old student who recently began attending Eagle Street Elementary School in February. On the first day of school, Joe's second grade teacher attempted to work with Joe and found that his academic skills appeared to be limited. He struggled in the literature selections that most other students in his class were able to read. Joe was able to perform simple calculation skills that his teacher gave to him but his math skills were unknown. He had difficulty communicating ideas in writing that he was able to convey verbally. His teacher had many questions about Joe's ability to acquire academic skills. A primary question is whether or not Joe's academic skills necessitated substantial modification of instruction and instructional materials for him to be successful in second grade.

Assessment

CBA was conducted in reading, math and written expression to collect information about the skills that Jose was able to develop in his previous school.

Results

Reading

When asked to read second grade text used in the classroom, Joe read fluently and accurately (see table below). His teacher was able to conclude that Joe does not have a problem with reading decoding and that his basic skills are adequate for him to apply what he reads. She will continually monitor Joe's ability to answer questions about what he read and provide intervention as necessary.

Text level	Fluency (CRW)	Accuracy (%CRW)	Challenge
End of second	68	96%	Mastery
Third	40	83%	Frustration

Written expression

Joe's teacher conducted a CBM writing assessment to measure Joe's ability to write a short story compared to his classmates. The entire class was asked to write a three minute story with a story starter. Joe wrote 25 correctly spelled words (76% accuracy), while the median performance in the class was 30 correctly spelled words with 78% accuracy (see table below). Joe used capital letters and periods and his story was imaginative and quite descriptive. His story had a logical sequence and he stuck to the story theme. Thus Joe appears to have developed some written expression skills. Joe's teacher decided that Joe's skills were not very different from other students in the classroom.

Table illustrating Joe's writing compared to median class performance

	CSW in 3 minutes	% CSW in 3 minutes
Joe	25	76%
Class median (middle score)	30	78%

*CSW – correctly spelled words in 3 minutes

Math

Joe's class is currently working on double-digit addition and subtraction. Most students in the class have mastered single-digit addition and subtraction. Joe's performance on the CBA math assessment indicated that he has mastered double-digit addition but needs additional practice in subtraction. He sometimes does not pay attention to whether he is supposed to add or subtract and he sometimes subtracts the top number from the bottom number. Through error analysis, his teacher was able to identify specific skills that Jose needs to learn in order to perform successfully.

Table showing Joe's fluency and accuracy in math calculations

Skill	Fluency (CD)	Accuracy (%CD)	Challenge
Addition/subtraction single digit	25	90%	Instructional
Double digit addition/subtraction	10	45%	Frustration

Summary

The CBA reading, math and written expression screening provided information concerning basic skill acquisition during Jose's previous schooling. Understanding his prior skill acquisition helps those working with him to know if he has academic proficiencies that he will be able to apply in his new classroom. In this case the teacher determined that Joe's current skills are such that the instruction in the classroom is at his level and that Joe needs minimal to no instructional modifications.

Advantages of this screening format include:

- Feasibility: Total screening time: approximately 25 minutes.
- Curriculum relevance: All skills observed were related to the second grade curriculum and materials used in his classroom. Furthermore, the assessment gathered information about basic skills that Jose had been taught in his previous school.
- Structured format: The assessment used directions and tasks that could be understood by the student. His performance could be objectively observed, and his current performance can be compared with future performance if his teacher wants to evaluate progress.
- Easy to administer.

Reading/Math Materials

Randomly Arranged Letters 1

r t x l z e s

n i k v a h u

w g b p r d m

y j t c e d o

r f v u z s n

i k x y a n u

w g p r d m y

j t c q d o f

v l z e s n i

Randomly Arranged Letters 2

r t v l z e s

f g p r d m y

j t c q d o f

v l z e s n i

k x y h u a g

b p r d m y j

r t v l z e s

n i k x a h u

r t x l z e s

Randomly Arranged Letters 3

n i k v a h u

w g b p r d m

y j t c e d o

r f v b z s n

n i k x a h u

r t x m z e s

h i k v a h u

w g b p r d m

y j t c e d o

r f v l z s n

i k x y a h u

f g p r d m y

j t c q d o f

v l z e s r i

k x y h u w g

r t x d z e s

o j f v t h q

w g b p r d m

i k x y a h u

f g p r d m y

j t c q d o f

v a z e s n i

k x y h u w g

o j f v t h q

w g b p r d m

y j t c e d o

r f v e z s n

Addition/subtraction sums to 10

$$\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$$

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

$$\begin{array}{r} 6 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

KEY

$\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ +3 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$	7
$\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ -9 \\ \hline 1 \end{array}$	$\begin{array}{r} 6 \\ -0 \\ \hline 6 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +5 \\ \hline 8 \end{array}$	13
$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -8 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	20
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 10 \\ -8 \\ \hline 2 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	26
$\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 1 \\ +7 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$	33
$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -8 \\ \hline 1 \end{array}$	$\begin{array}{r} 9 \\ -6 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	39
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ -4 \\ \hline 0 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	45

$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$
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$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 0 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$
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$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$
--	--	--	--	---	--

$\begin{array}{r} 10 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$
---	--	--	--	--	--

$\begin{array}{r} 1 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$
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$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -1 \\ \hline \end{array}$
--	--	--	--	--	--

Addition/subtraction sums to 10

$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ -4 \\ \hline 0 \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$	7
$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$	$\begin{array}{r} 0 \\ +5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ -2 \\ \hline 8 \end{array}$	13
$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 1 \\ +2 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +4 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline 4 \end{array}$	19
$\begin{array}{r} 10 \\ -8 \\ \hline 2 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	$\begin{array}{r} 1 \\ +9 \\ \hline 10 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	26
$\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$	$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	32
$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array}$	$\begin{array}{r} 10 \\ -7 \\ \hline 3 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 10 \\ -1 \\ \hline 9 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	38
$\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 2 \\ +4 \\ \hline 6 \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$	$\begin{array}{r} 5 \\ -1 \\ \hline 4 \end{array}$	45

Addition/subtraction sums to 10

$$\begin{array}{r} 4 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$$

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

$$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

Addition/subtraction sums to 10

$\begin{array}{r} 4 \\ +1 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 3 \\ +7 \\ \hline 10 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$	8
$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 6 \\ +1 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -6 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	14
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ -4 \\ \hline 8 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	20
$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$	27
$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ +1 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +4 \\ \hline 5 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline 4 \end{array}$	33
$\begin{array}{r} 8 \\ -8 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline 4 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	39
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	45

Addition/subtraction sums to 10

$$\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$$

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

$$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$$

$\frac{2}{+3}$ 5	$\frac{2}{+7}$ 9	$\frac{0}{+9}$ 9	$\frac{7}{-0}$ 7	$\frac{9}{-8}$ 1	$\frac{3}{-3}$ 0	6
$\frac{4}{+3}$ 7	$\frac{9}{-5}$ 4	$\frac{3}{+7}$ 10	$\frac{9}{-4}$ 5	$\frac{8}{+2}$ 10	$\frac{5}{+4}$ 9	14
$\frac{5}{-2}$ 3	$\frac{8}{-5}$ 3	$\frac{0}{+7}$ 7	$\frac{7}{+2}$ 9	$\frac{9}{-6}$ 3	$\frac{8}{-5}$ 3	20
$\frac{1}{+6}$ 7	$\frac{1}{-0}$ 1	$\frac{4}{+5}$ 9	$\frac{1}{+0}$ 1	$\frac{4}{-4}$ 0	$\frac{6}{-2}$ 4	26
$\frac{10}{-9}$ 1	$\frac{6}{-5}$ 1	$\frac{8}{+1}$ 9	$\frac{4}{+0}$ 4	$\frac{10}{-4}$ 6	$\frac{2}{+2}$ 4	32
$\frac{6}{-6}$ 0	$\frac{7}{+1}$ 8	$\frac{9}{+0}$ 9	$\frac{5}{+4}$ 9	$\frac{10}{-3}$ 7	$\frac{4}{+3}$ 7	38
$\frac{9}{+1}$ 10	$\frac{5}{-5}$ 0	$\frac{7}{-1}$ 6	$\frac{8}{-8}$ 0	$\frac{7}{-2}$ 5	$\frac{3}{+1}$ 4	45

$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$
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$\begin{array}{r} 7 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -2 \\ \hline \end{array}$
--	---	--	--	---	---

$\begin{array}{r} 6 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$
--	--	--	--	---	--

$\begin{array}{r} 6 \\ +8 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +8 \\ \hline \end{array}$
--	--	---	---	--	--

$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$
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$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$
--	--	--	--	---	--

$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ +5 \\ \hline 19 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$	8
$\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$	$\begin{array}{r} 10 \\ +5 \\ \hline 15 \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 19 \\ -4 \\ \hline 15 \end{array}$	$\begin{array}{r} 10 \\ -2 \\ \hline 8 \end{array}$	17
$\begin{array}{r} 6 \\ +6 \\ \hline 12 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ +3 \\ \hline 13 \end{array}$	$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	26
$\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ -9 \\ \hline 1 \end{array}$	$\begin{array}{r} 16 \\ -0 \\ \hline 16 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +8 \\ \hline 11 \end{array}$	35
$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 13 \\ -8 \\ \hline 5 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	43
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	51

$$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

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

$$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$$

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

$$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$$

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

$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$	10
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline 19 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	18
$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline 12 \end{array}$	26
$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline 19 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline 17 \end{array}$	35
$\begin{array}{r} 16 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ +3 \\ \hline 12 \end{array}$	$\begin{array}{r} 10 \\ +9 \\ \hline 19 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	43
$\begin{array}{r} 19 \\ +1 \\ \hline 20 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 17 \\ -3 \\ \hline 14 \end{array}$	$\begin{array}{r} 13 \\ +6 \\ \hline 19 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	52
$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array}$	$\begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	58

$\begin{array}{r} 14 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$
---	--	--	--	--	---

$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$
--	--	--	--	---	--

$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 5 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -5 \\ \hline \end{array}$
--	--	--	--	---	---

$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$
--	--	--	---	---	--

$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline \end{array}$
---	---	--	--	---	---

$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline \end{array}$
--	--	--	---	---	---

$\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ +4 \\ \hline 13 \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	8
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	16
$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$	26
$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 19 \\ -6 \\ \hline 13 \end{array}$	$\begin{array}{r} 18 \\ -5 \\ \hline 13 \end{array}$	35
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline 19 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	43
$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline 12 \end{array}$	51
$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline 19 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline 17 \end{array}$	60

16	9	10	1	5	3
<u>-8</u>	<u>+3</u>	<u>+9</u>	<u>-0</u>	<u>-5</u>	<u>+2</u>

9	5	7	13	7	3
<u>+1</u>	<u>-5</u>	<u>-1</u>	<u>-8</u>	<u>-2</u>	<u>+1</u>

2	9	8	7	15	3
<u>+3</u>	<u>+7</u>	<u>+9</u>	<u>-0</u>	<u>-8</u>	<u>-3</u>

4	9	7	9	8	5
<u>+9</u>	<u>-5</u>	<u>+7</u>	<u>-4</u>	<u>+2</u>	<u>+8</u>

5	8	0	8	19	18
<u>-2</u>	<u>-5</u>	<u>+7</u>	<u>+9</u>	<u>-6</u>	<u>-5</u>

11	1	4	19	14	6
<u>+6</u>	<u>-0</u>	<u>+5</u>	<u>+0</u>	<u>-4</u>	<u>-2</u>

17	10	8	4	10	10
<u>-9</u>	<u>-5</u>	<u>+7</u>	<u>+0</u>	<u>-4</u>	<u>+2</u>

$\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ +3 \\ \hline 12 \end{array}$	$\begin{array}{r} 10 \\ +9 \\ \hline 19 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	8
$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$	$\begin{array}{r} 13 \\ -8 \\ \hline 5 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	15
$\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	23
$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$	33
$\begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 19 \\ -6 \\ \hline 13 \end{array}$	$\begin{array}{r} 18 \\ -5 \\ \hline 13 \end{array}$	42
$\begin{array}{r} 11 \\ +6 \\ \hline 17 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline 19 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	51
$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline 12 \end{array}$	59

6	7	9	15	10	14
<u>-6</u>	<u>+7</u>	<u>+0</u>	<u>+4</u>	<u>-3</u>	<u>+3</u>

16	9	10	1	5	3
<u>-8</u>	<u>+3</u>	<u>+9</u>	<u>-0</u>	<u>-5</u>	<u>+2</u>

1	9	14	9	14	6
<u>+6</u>	<u>-0</u>	<u>+5</u>	<u>+0</u>	<u>-4</u>	<u>+2</u>

7	10	8	4	19	10
<u>+9</u>	<u>+5</u>	<u>-7</u>	<u>+0</u>	<u>-4</u>	<u>-2</u>

6	7	9	5	10	4
<u>+6</u>	<u>-7</u>	<u>-0</u>	<u>+4</u>	<u>+3</u>	<u>+9</u>

6	9	10	16	5	3
<u>+8</u>	<u>-3</u>	<u>-9</u>	<u>-0</u>	<u>-5</u>	<u>+8</u>

9	5	17	13	7	3
<u>+1</u>	<u>-5</u>	<u>-10</u>	<u>-8</u>	<u>-2</u>	<u>+1</u>

$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline 19 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline 17 \end{array}$	9
$\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ +3 \\ \hline 12 \end{array}$	$\begin{array}{r} 10 \\ +9 \\ \hline 19 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	17
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ +5 \\ \hline 19 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$	25
$\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$	$\begin{array}{r} 10 \\ +5 \\ \hline 15 \end{array}$	$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 19 \\ -4 \\ \hline 15 \end{array}$	$\begin{array}{r} 10 \\ -2 \\ \hline 8 \end{array}$	34
$\begin{array}{r} 6 \\ +6 \\ \hline 12 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ +3 \\ \hline 13 \end{array}$	$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	43
$\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ -9 \\ \hline 1 \end{array}$	$\begin{array}{r} 16 \\ -0 \\ \hline 16 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +8 \\ \hline 11 \end{array}$	52
$\begin{array}{r} 9 \\ +1 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 17 \\ -10 \\ \hline 7 \end{array}$	$\begin{array}{r} 13 \\ -8 \\ \hline 5 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	59

Addition/Subtraction sums ≤ 20

$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$
$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$
$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$
$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline \end{array}$
$\begin{array}{r} 6 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline \end{array}$
$\begin{array}{r} 16 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ +3 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ +9 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$
$\begin{array}{r} 19 \\ +1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ +6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	8
$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$	18
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline 19 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	26
$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline 12 \end{array}$	34
$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 15 \\ +4 \\ \hline 19 \end{array}$	$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$	$\begin{array}{r} 14 \\ +3 \\ \hline 17 \end{array}$	43
$\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ +3 \\ \hline 12 \end{array}$	$\begin{array}{r} 10 \\ +9 \\ \hline 19 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	51
$\begin{array}{r} 19 \\ +1 \\ \hline 20 \end{array}$	$\begin{array}{r} 5 \\ -5 \\ \hline 0 \end{array}$	$\begin{array}{r} 17 \\ -3 \\ \hline 14 \end{array}$	$\begin{array}{r} 13 \\ +6 \\ \hline 19 \end{array}$	$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	60

$$\begin{array}{r} 15 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$$

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

$$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

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

$$\begin{array}{r} 9 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ -0 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ +2 \\ \hline \end{array}$$

$\begin{array}{r} 15 \\ +3 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array}$	$\begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array}$	7
$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$	$\begin{array}{r} 9 \\ +4 \\ \hline 13 \end{array}$	$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	16
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 7 \\ -0 \\ \hline 7 \end{array}$	$\begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$	$\begin{array}{r} 3 \\ -3 \\ \hline 0 \end{array}$	24
$\begin{array}{r} 4 \\ +9 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 5 \\ +8 \\ \hline 13 \end{array}$	34
$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array}$	$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$	$\begin{array}{r} 0 \\ +7 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$	$\begin{array}{r} 19 \\ -6 \\ \hline 13 \end{array}$	$\begin{array}{r} 18 \\ -5 \\ \hline 13 \end{array}$	43
$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array}$	$\begin{array}{r} 1 \\ -0 \\ \hline 1 \end{array}$	$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$	$\begin{array}{r} 19 \\ +0 \\ \hline 19 \end{array}$	$\begin{array}{r} 14 \\ -4 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$	51
$\begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array}$	$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array}$	$\begin{array}{r} 10 \\ +2 \\ \hline 12 \end{array}$	59

Single digit multiplication

$$\begin{array}{r} 2 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

$\begin{array}{r} 2 \\ \times 1 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ \times 7 \\ \hline 63 \end{array}$	$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 8 \\ \times 8 \\ \hline 64 \end{array}$	10
$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$	$\begin{array}{r} 1 \\ \times 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 9 \\ \times 8 \\ \hline 72 \end{array}$	$\begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array}$	$\begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array}$	$\begin{array}{r} 2 \\ \times 9 \\ \hline 18 \end{array}$	21
$\begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array}$	$\begin{array}{r} 1 \\ \times 4 \\ \hline 4 \end{array}$	$\begin{array}{r} 9 \\ \times 8 \\ \hline 72 \end{array}$	$\begin{array}{r} 2 \\ \times 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$	$\begin{array}{r} 4 \\ \times 1 \\ \hline 4 \end{array}$	30
$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$	$\begin{array}{r} 1 \\ \times 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 3 \\ \times 1 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ \times 7 \\ \hline 63 \end{array}$	40
$\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$	$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$	$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$	$\begin{array}{r} 5 \\ \times 8 \\ \hline 40 \end{array}$	$\begin{array}{r} 1 \\ \times 6 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline 9 \end{array}$	49
$\begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 8 \\ \times 9 \\ \hline 72 \end{array}$	$\begin{array}{r} 3 \\ \times 7 \\ \hline 21 \end{array}$	$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$	60
$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline 28 \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$	$\begin{array}{r} 1 \\ \times 3 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ \times 5 \\ \hline 45 \end{array}$	$\begin{array}{r} 8 \\ \times 4 \\ \hline 32 \end{array}$	71

Single digit multiplication

$$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 2 \\ \times 6 \\ \hline 12 \end{array}$	$\begin{array}{r} 7 \\ \times 1 \\ \hline 7 \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$	10
$\begin{array}{r} 5 \\ \times 4 \\ \hline 20 \end{array}$	$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$	$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$	$\begin{array}{r} 9 \\ \times 3 \\ \hline 27 \end{array}$	$\begin{array}{r} 1 \\ \times 9 \\ \hline 9 \end{array}$	$\begin{array}{r} 4 \\ \times 8 \\ \hline 32 \end{array}$	21
$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline 28 \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$	32
$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	$\begin{array}{r} 2 \\ \times 3 \\ \hline 6 \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ \times 9 \\ \hline 63 \end{array}$	42
$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline 35 \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	54

Single digit multiplication

$$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 1 \\ \hline \end{array}$$

$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline 35 \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	12
$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$	$\begin{array}{r} 9 \\ \times 4 \\ \hline 36 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 8 \\ \times 9 \\ \hline 72 \end{array}$	24
$\begin{array}{r} 7 \\ \times 8 \\ \hline 56 \end{array}$	$\begin{array}{r} 1 \\ \times 3 \\ \hline 3 \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline 18 \end{array}$	$\begin{array}{r} 2 \\ \times 6 \\ \hline 12 \end{array}$	$\begin{array}{r} 5 \\ \times 1 \\ \hline 5 \end{array}$	$\begin{array}{r} 4 \\ \times 7 \\ \hline 28 \end{array}$	34
$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$	$\begin{array}{r} 3 \\ \times 9 \\ \hline 27 \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline 35 \end{array}$	$\begin{array}{r} 1 \\ \times 5 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline 9 \end{array}$	44
$\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ \times 8 \\ \hline 56 \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$	$\begin{array}{r} 1 \\ \times 2 \\ \hline 2 \end{array}$	$\begin{array}{r} 9 \\ \times 1 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ \times 7 \\ \hline 56 \end{array}$	53
$\begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline 35 \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array}$	65
$\begin{array}{r} 6 \\ \times 6 \\ \hline 36 \end{array}$	$\begin{array}{r} 4 \\ \times 4 \\ \hline 16 \end{array}$	$\begin{array}{r} 7 \\ \times 8 \\ \hline 56 \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$	$\begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ \times 1 \\ \hline 4 \end{array}$	75

Double digit addition/subtraction (no regrouping)

$$\begin{array}{r} 11 \\ +62 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ +43 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ +15 \\ \hline \end{array}$$

$$\begin{array}{r} 24 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ +45 \\ \hline \end{array}$$

$$\begin{array}{r} 69 \\ -26 \\ \hline \end{array}$$

$$\begin{array}{r} 89 \\ -21 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ -57 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ +10 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ +54 \\ \hline \end{array}$$

$$\begin{array}{r} 85 \\ -72 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ +26 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ -31 \\ \hline \end{array}$$

$$\begin{array}{r} 27 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ -44 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ +13 \\ \hline \end{array}$$

$$\begin{array}{r} 46 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} 29 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ -34 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ -10 \\ \hline \end{array}$$

$$\begin{array}{r} 57 \\ +12 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ +42 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ -76 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ +34 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ -10 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ +12 \\ \hline \end{array}$$

$$\begin{array}{r} 47 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} 36 \\ +13 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ +34 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ -65 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -11 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ +84 \\ \hline \end{array}$$

$$\begin{array}{r} 39 \\ -37 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ -53 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ +17 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ -40 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ +13 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ -22 \\ \hline \end{array}$$

Double digit addition/subtraction (no regrouping)

$\begin{array}{r} 11 \\ +62 \\ \hline 73 \end{array}$	$\begin{array}{r} 31 \\ +43 \\ \hline 74 \end{array}$	$\begin{array}{r} 54 \\ +15 \\ \hline 69 \end{array}$	$\begin{array}{r} 24 \\ -24 \\ \hline 00 \end{array}$	$\begin{array}{r} 14 \\ +45 \\ \hline 59 \end{array}$	$\begin{array}{r} 69 \\ -26 \\ \hline 43 \end{array}$	12
$\begin{array}{r} 89 \\ -21 \\ \hline 68 \end{array}$	$\begin{array}{r} 99 \\ -57 \\ \hline 42 \end{array}$	$\begin{array}{r} 87 \\ -17 \\ \hline 70 \end{array}$	$\begin{array}{r} 42 \\ +10 \\ \hline 52 \end{array}$	$\begin{array}{r} 12 \\ +54 \\ \hline 66 \end{array}$	$\begin{array}{r} 85 \\ -72 \\ \hline 13 \end{array}$	24
$\begin{array}{r} 61 \\ +26 \\ \hline 87 \end{array}$	$\begin{array}{r} 71 \\ -31 \\ \hline 40 \end{array}$	$\begin{array}{r} 27 \\ -12 \\ \hline 15 \end{array}$	$\begin{array}{r} 45 \\ -44 \\ \hline 01 \end{array}$	$\begin{array}{r} 82 \\ +13 \\ \hline 95 \end{array}$	$\begin{array}{r} 46 \\ +23 \\ \hline 69 \end{array}$	36
$\begin{array}{r} 16 \\ +23 \\ \hline 39 \end{array}$	$\begin{array}{r} 29 \\ -13 \\ \hline 16 \end{array}$	$\begin{array}{r} 86 \\ -34 \\ \hline 52 \end{array}$	$\begin{array}{r} 76 \\ -10 \\ \hline 66 \end{array}$	$\begin{array}{r} 57 \\ +12 \\ \hline 69 \end{array}$	$\begin{array}{r} 34 \\ +42 \\ \hline 76 \end{array}$	48
$\begin{array}{r} 99 \\ -76 \\ \hline 23 \end{array}$	$\begin{array}{r} 51 \\ +34 \\ \hline 85 \end{array}$	$\begin{array}{r} 17 \\ -10 \\ \hline 07 \end{array}$	$\begin{array}{r} 43 \\ +12 \\ \hline 55 \end{array}$	$\begin{array}{r} 47 \\ -12 \\ \hline 35 \end{array}$	$\begin{array}{r} 36 \\ +13 \\ \hline 49 \end{array}$	60
$\begin{array}{r} 15 \\ +34 \\ \hline 49 \end{array}$	$\begin{array}{r} 97 \\ -65 \\ \hline 32 \end{array}$	$\begin{array}{r} 81 \\ -11 \\ \hline 70 \end{array}$	$\begin{array}{r} 77 \\ -23 \\ \hline 54 \end{array}$	$\begin{array}{r} 15 \\ +84 \\ \hline 99 \end{array}$	$\begin{array}{r} 39 \\ -37 \\ \hline 02 \end{array}$	72
$\begin{array}{r} 49 \\ -19 \\ \hline 30 \end{array}$	$\begin{array}{r} 86 \\ -53 \\ \hline 33 \end{array}$	$\begin{array}{r} 71 \\ +17 \\ \hline 88 \end{array}$	$\begin{array}{r} 93 \\ -40 \\ \hline 53 \end{array}$	$\begin{array}{r} 83 \\ +13 \\ \hline 96 \end{array}$	$\begin{array}{r} 54 \\ -22 \\ \hline 32 \end{array}$	84

Double digit addition/subtraction (no regrouping)

$\begin{array}{r} 11 \\ +45 \\ \hline \end{array}$	$\begin{array}{r} 61 \\ -40 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ +15 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ +64 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ +45 \\ \hline \end{array}$	$\begin{array}{r} 69 \\ -26 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 89 \\ -26 \\ \hline \end{array}$	$\begin{array}{r} 99 \\ -31 \\ \hline \end{array}$	$\begin{array}{r} 87 \\ -12 \\ \hline \end{array}$	$\begin{array}{r} 44 \\ -42 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ +13 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ +13 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 96 \\ -76 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ +34 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ +12 \\ \hline \end{array}$	$\begin{array}{r} 57 \\ -12 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ +13 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 19 \\ -15 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ -53 \\ \hline \end{array}$	$\begin{array}{r} 81 \\ +17 \\ \hline \end{array}$	$\begin{array}{r} 77 \\ -40 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ +23 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ -22 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 54 \\ +23 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ -41 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ +33 \\ \hline \end{array}$	$\begin{array}{r} 94 \\ -83 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -16 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ -61 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 15 \\ +34 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ -65 \\ \hline \end{array}$	$\begin{array}{r} 81 \\ -11 \\ \hline \end{array}$	$\begin{array}{r} 77 \\ -23 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ +84 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ -37 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 49 \\ -19 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ -53 \\ \hline \end{array}$	$\begin{array}{r} 71 \\ +17 \\ \hline \end{array}$	$\begin{array}{r} 93 \\ -40 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ +23 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ -22 \\ \hline \end{array}$
--	--	--	--	--	--

Double digit addition/subtraction (no regrouping)

$\begin{array}{r} 11 \\ +45 \\ \hline 56 \end{array}$	$\begin{array}{r} 61 \\ -40 \\ \hline 21 \end{array}$	$\begin{array}{r} 54 \\ +15 \\ \hline 69 \end{array}$	$\begin{array}{r} 24 \\ +64 \\ \hline 88 \end{array}$	$\begin{array}{r} 14 \\ +45 \\ \hline 59 \end{array}$	$\begin{array}{r} 69 \\ -26 \\ \hline 43 \end{array}$	12
$\begin{array}{r} 89 \\ -26 \\ \hline 63 \end{array}$	$\begin{array}{r} 99 \\ -31 \\ \hline 68 \end{array}$	$\begin{array}{r} 87 \\ -12 \\ \hline 75 \end{array}$	$\begin{array}{r} 44 \\ -42 \\ \hline 02 \end{array}$	$\begin{array}{r} 12 \\ +13 \\ \hline 25 \end{array}$	$\begin{array}{r} 85 \\ +13 \\ \hline 98 \end{array}$	24
$\begin{array}{r} 96 \\ -76 \\ \hline 20 \end{array}$	$\begin{array}{r} 24 \\ +34 \\ \hline 58 \end{array}$	$\begin{array}{r} 86 \\ -10 \\ \hline 76 \end{array}$	$\begin{array}{r} 76 \\ +12 \\ \hline 88 \end{array}$	$\begin{array}{r} 57 \\ -12 \\ \hline 65 \end{array}$	$\begin{array}{r} 34 \\ +13 \\ \hline 47 \end{array}$	36
$\begin{array}{r} 19 \\ -15 \\ \hline 04 \end{array}$	$\begin{array}{r} 97 \\ -53 \\ \hline 44 \end{array}$	$\begin{array}{r} 81 \\ +17 \\ \hline 98 \end{array}$	$\begin{array}{r} 77 \\ -40 \\ \hline 37 \end{array}$	$\begin{array}{r} 15 \\ +23 \\ \hline 38 \end{array}$	$\begin{array}{r} 39 \\ -22 \\ \hline 17 \end{array}$	48
$\begin{array}{r} 54 \\ +23 \\ \hline 77 \end{array}$	$\begin{array}{r} 86 \\ -41 \\ \hline 45 \end{array}$	$\begin{array}{r} 64 \\ +33 \\ \hline 97 \end{array}$	$\begin{array}{r} 94 \\ -83 \\ \hline 11 \end{array}$	$\begin{array}{r} 18 \\ -16 \\ \hline 02 \end{array}$	$\begin{array}{r} 83 \\ -61 \\ \hline 22 \end{array}$	60
$\begin{array}{r} 15 \\ +34 \\ \hline 49 \end{array}$	$\begin{array}{r} 97 \\ -65 \\ \hline 32 \end{array}$	$\begin{array}{r} 81 \\ -11 \\ \hline 70 \end{array}$	$\begin{array}{r} 77 \\ -23 \\ \hline 54 \end{array}$	$\begin{array}{r} 15 \\ +84 \\ \hline 99 \end{array}$	$\begin{array}{r} 39 \\ -37 \\ \hline 02 \end{array}$	72
$\begin{array}{r} 49 \\ -19 \\ \hline 30 \end{array}$	$\begin{array}{r} 86 \\ -53 \\ \hline 33 \end{array}$	$\begin{array}{r} 71 \\ +17 \\ \hline 88 \end{array}$	$\begin{array}{r} 93 \\ -40 \\ \hline 53 \end{array}$	$\begin{array}{r} 73 \\ +23 \\ \hline 96 \end{array}$	$\begin{array}{r} 54 \\ -22 \\ \hline 36 \end{array}$	84

Double digit addition/subtraction (no regrouping)

16	29	86	76	57	34
<u>+23</u>	<u>-13</u>	<u>-34</u>	<u>-10</u>	<u>+12</u>	<u>+42</u>

99	51	17	43	47	36
<u>-76</u>	<u>+34</u>	<u>-10</u>	<u>+12</u>	<u>-12</u>	<u>+13</u>

15	97	81	77	15	39
<u>+34</u>	<u>-65</u>	<u>-11</u>	<u>-23</u>	<u>+84</u>	<u>-37</u>

19	97	81	77	15	39
<u>-15</u>	<u>-53</u>	<u>+17</u>	<u>-40</u>	<u>+23</u>	<u>-22</u>

54	86	64	94	18	83
<u>+23</u>	<u>-41</u>	<u>+33</u>	<u>-83</u>	<u>-16</u>	<u>-61</u>

15	97	81	77	15	39
<u>+34</u>	<u>-65</u>	<u>-11</u>	<u>-23</u>	<u>+84</u>	<u>-37</u>

49	86	71	93	63	54
<u>-19</u>	<u>-53</u>	<u>+17</u>	<u>-40</u>	<u>+23</u>	<u>-22</u>

Double digit addition/subtraction (no regrouping)

$\begin{array}{r} 16 \\ +23 \\ \hline 39 \end{array}$	$\begin{array}{r} 29 \\ -13 \\ \hline 16 \end{array}$	$\begin{array}{r} 86 \\ -34 \\ \hline 52 \end{array}$	$\begin{array}{r} 76 \\ -10 \\ \hline 66 \end{array}$	$\begin{array}{r} 57 \\ +12 \\ \hline 69 \end{array}$	$\begin{array}{r} 34 \\ +42 \\ \hline 76 \end{array}$	12
$\begin{array}{r} 99 \\ -76 \\ \hline 23 \end{array}$	$\begin{array}{r} 51 \\ +34 \\ \hline 85 \end{array}$	$\begin{array}{r} 17 \\ -10 \\ \hline 07 \end{array}$	$\begin{array}{r} 43 \\ +12 \\ \hline 55 \end{array}$	$\begin{array}{r} 47 \\ -12 \\ \hline 35 \end{array}$	$\begin{array}{r} 36 \\ +13 \\ \hline 49 \end{array}$	24
$\begin{array}{r} 15 \\ +34 \\ \hline 49 \end{array}$	$\begin{array}{r} 97 \\ -65 \\ \hline 32 \end{array}$	$\begin{array}{r} 81 \\ -11 \\ \hline 70 \end{array}$	$\begin{array}{r} 77 \\ -23 \\ \hline 54 \end{array}$	$\begin{array}{r} 15 \\ +84 \\ \hline 99 \end{array}$	$\begin{array}{r} 39 \\ -37 \\ \hline 02 \end{array}$	36
$\begin{array}{r} 19 \\ -15 \\ \hline 04 \end{array}$	$\begin{array}{r} 97 \\ -53 \\ \hline 44 \end{array}$	$\begin{array}{r} 81 \\ +17 \\ \hline 98 \end{array}$	$\begin{array}{r} 77 \\ -40 \\ \hline 37 \end{array}$	$\begin{array}{r} 15 \\ +23 \\ \hline 38 \end{array}$	$\begin{array}{r} 39 \\ -22 \\ \hline 17 \end{array}$	48
$\begin{array}{r} 54 \\ +23 \\ \hline 77 \end{array}$	$\begin{array}{r} 86 \\ -41 \\ \hline 45 \end{array}$	$\begin{array}{r} 64 \\ +33 \\ \hline 97 \end{array}$	$\begin{array}{r} 94 \\ -83 \\ \hline 11 \end{array}$	$\begin{array}{r} 18 \\ -16 \\ \hline 02 \end{array}$	$\begin{array}{r} 83 \\ -61 \\ \hline 22 \end{array}$	60
$\begin{array}{r} 15 \\ +34 \\ \hline 49 \end{array}$	$\begin{array}{r} 97 \\ -65 \\ \hline 32 \end{array}$	$\begin{array}{r} 81 \\ -11 \\ \hline 70 \end{array}$	$\begin{array}{r} 77 \\ -23 \\ \hline 54 \end{array}$	$\begin{array}{r} 15 \\ +84 \\ \hline 99 \end{array}$	$\begin{array}{r} 39 \\ -37 \\ \hline 03 \end{array}$	72
$\begin{array}{r} 49 \\ -19 \\ \hline 30 \end{array}$	$\begin{array}{r} 86 \\ -53 \\ \hline 33 \end{array}$	$\begin{array}{r} 71 \\ +17 \\ \hline 88 \end{array}$	$\begin{array}{r} 93 \\ -40 \\ \hline 53 \end{array}$	$\begin{array}{r} 63 \\ +23 \\ \hline 86 \end{array}$	$\begin{array}{r} 54 \\ -22 \\ \hline 32 \end{array}$	84

Double digit addition/subtraction (regrouping)

19	38	56	44	14	62
<u>+62</u>	<u>+43</u>	<u>+15</u>	<u>-29</u>	<u>+48</u>	<u>-26</u>

85	93	84	42	17	81
<u>-28</u>	<u>-57</u>	<u>-17</u>	<u>+19</u>	<u>+54</u>	<u>-72</u>

66	70	27	73	88	46
<u>+26</u>	<u>-31</u>	<u>-19</u>	<u>-44</u>	<u>+19</u>	<u>+28</u>

16	21	83	70	57	34
<u>+28</u>	<u>-13</u>	<u>-34</u>	<u>-16</u>	<u>+17</u>	<u>+48</u>

95	57	37	45	41	36
<u>-76</u>	<u>+34</u>	<u>-18</u>	<u>+17</u>	<u>-12</u>	<u>+17</u>

17	93	81	71	17	85
<u>+34</u>	<u>-65</u>	<u>-19</u>	<u>-23</u>	<u>+84</u>	<u>-37</u>

40	83	79	93	88	52
<u>-19</u>	<u>-56</u>	<u>+19</u>	<u>-44</u>	<u>+23</u>	<u>-24</u>

Double digit addition/subtraction (regrouping)

$\begin{array}{r} 19 \\ +62 \\ \hline 81 \end{array}$	$\begin{array}{r} 38 \\ +43 \\ \hline 81 \end{array}$	$\begin{array}{r} 56 \\ +15 \\ \hline 71 \end{array}$	$\begin{array}{r} 44 \\ -29 \\ \hline 15 \end{array}$	$\begin{array}{r} 14 \\ +48 \\ \hline 62 \end{array}$	$\begin{array}{r} 62 \\ -26 \\ \hline 36 \end{array}$	12
$\begin{array}{r} 85 \\ -28 \\ \hline 57 \end{array}$	$\begin{array}{r} 93 \\ -57 \\ \hline 36 \end{array}$	$\begin{array}{r} 84 \\ -17 \\ \hline 67 \end{array}$	$\begin{array}{r} 42 \\ +19 \\ \hline 61 \end{array}$	$\begin{array}{r} 17 \\ +54 \\ \hline 71 \end{array}$	$\begin{array}{r} 81 \\ -72 \\ \hline 09 \end{array}$	24
$\begin{array}{r} 66 \\ +26 \\ \hline 92 \end{array}$	$\begin{array}{r} 70 \\ -31 \\ \hline 39 \end{array}$	$\begin{array}{r} 27 \\ -19 \\ \hline 08 \end{array}$	$\begin{array}{r} 73 \\ -44 \\ \hline 29 \end{array}$	$\begin{array}{r} 88 \\ +19 \\ \hline 107 \end{array}$	$\begin{array}{r} 46 \\ +28 \\ \hline 74 \end{array}$	37
$\begin{array}{r} 16 \\ +28 \\ \hline 44 \end{array}$	$\begin{array}{r} 21 \\ -13 \\ \hline 08 \end{array}$	$\begin{array}{r} 83 \\ -34 \\ \hline 49 \end{array}$	$\begin{array}{r} 70 \\ -16 \\ \hline 54 \end{array}$	$\begin{array}{r} 57 \\ +17 \\ \hline 74 \end{array}$	$\begin{array}{r} 34 \\ +48 \\ \hline 82 \end{array}$	49
$\begin{array}{r} 95 \\ -76 \\ \hline 19 \end{array}$	$\begin{array}{r} 57 \\ +34 \\ \hline 91 \end{array}$	$\begin{array}{r} 37 \\ -18 \\ \hline 19 \end{array}$	$\begin{array}{r} 45 \\ +17 \\ \hline 62 \end{array}$	$\begin{array}{r} 41 \\ -12 \\ \hline 29 \end{array}$	$\begin{array}{r} 36 \\ +17 \\ \hline 53 \end{array}$	61
$\begin{array}{r} 17 \\ +34 \\ \hline 51 \end{array}$	$\begin{array}{r} 93 \\ -65 \\ \hline 28 \end{array}$	$\begin{array}{r} 81 \\ -19 \\ \hline 62 \end{array}$	$\begin{array}{r} 71 \\ -23 \\ \hline 48 \end{array}$	$\begin{array}{r} 17 \\ +84 \\ \hline 101 \end{array}$	$\begin{array}{r} 85 \\ -37 \\ \hline 48 \end{array}$	74
$\begin{array}{r} 40 \\ -19 \\ \hline 21 \end{array}$	$\begin{array}{r} 83 \\ -56 \\ \hline 27 \end{array}$	$\begin{array}{r} 79 \\ +19 \\ \hline 98 \end{array}$	$\begin{array}{r} 93 \\ -44 \\ \hline 49 \end{array}$	$\begin{array}{r} 88 \\ +23 \\ \hline 111 \end{array}$	$\begin{array}{r} 52 \\ -24 \\ \hline 28 \end{array}$	87

Double digit addition/subtraction (regrouping)

$\begin{array}{r} 17 \\ +45 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ -42 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ +15 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ +64 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ +46 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ -26 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 85 \\ -26 \\ \hline \end{array}$	$\begin{array}{r} 91 \\ -39 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ -17 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ -43 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ +13 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ +18 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 95 \\ -76 \\ \hline \end{array}$	$\begin{array}{r} 28 \\ +34 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ -17 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ +19 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ -12 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ +13 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 23 \\ -15 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ -53 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ +17 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ -46 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ +28 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ -25 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 59 \\ +23 \\ \hline \end{array}$	$\begin{array}{r} 81 \\ -46 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ +38 \\ \hline \end{array}$	$\begin{array}{r} 92 \\ -83 \\ \hline \end{array}$	$\begin{array}{r} 52 \\ -16 \\ \hline \end{array}$	$\begin{array}{r} 81 \\ -65 \\ \hline \end{array}$
--	--	--	--	--	--

$\begin{array}{r} 15 \\ +39 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ -68 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ -11 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ -23 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ +84 \\ \hline \end{array}$	$\begin{array}{r} 96 \\ -37 \\ \hline \end{array}$
--	--	--	--	--	--

Double digit addition/subtraction (regrouping)

$\begin{array}{r} 17 \\ +45 \\ \hline 62 \end{array}$	$\begin{array}{r} 60 \\ -42 \\ \hline 18 \end{array}$	$\begin{array}{r} 58 \\ +15 \\ \hline 73 \end{array}$	$\begin{array}{r} 29 \\ +64 \\ \hline 93 \end{array}$	$\begin{array}{r} 14 \\ +46 \\ \hline 60 \end{array}$	$\begin{array}{r} 64 \\ -26 \\ \hline 38 \end{array}$	12
$\begin{array}{r} 85 \\ -26 \\ \hline 59 \end{array}$	$\begin{array}{r} 91 \\ -39 \\ \hline 52 \end{array}$	$\begin{array}{r} 82 \\ -17 \\ \hline 65 \end{array}$	$\begin{array}{r} 72 \\ -43 \\ \hline 29 \end{array}$	$\begin{array}{r} 19 \\ +13 \\ \hline 32 \end{array}$	$\begin{array}{r} 85 \\ +18 \\ \hline 103 \end{array}$	25
$\begin{array}{r} 95 \\ -76 \\ \hline 19 \end{array}$	$\begin{array}{r} 28 \\ +34 \\ \hline 62 \end{array}$	$\begin{array}{r} 86 \\ -17 \\ \hline 69 \end{array}$	$\begin{array}{r} 76 \\ +19 \\ \hline 95 \end{array}$	$\begin{array}{r} 50 \\ -12 \\ \hline 38 \end{array}$	$\begin{array}{r} 37 \\ +13 \\ \hline 50 \end{array}$	37
$\begin{array}{r} 23 \\ -15 \\ \hline 08 \end{array}$	$\begin{array}{r} 90 \\ -53 \\ \hline 37 \end{array}$	$\begin{array}{r} 83 \\ +17 \\ \hline 100 \end{array}$	$\begin{array}{r} 75 \\ -46 \\ \hline 29 \end{array}$	$\begin{array}{r} 17 \\ +28 \\ \hline 45 \end{array}$	$\begin{array}{r} 34 \\ -25 \\ \hline 09 \end{array}$	50
$\begin{array}{r} 59 \\ +23 \\ \hline 82 \end{array}$	$\begin{array}{r} 81 \\ -46 \\ \hline 35 \end{array}$	$\begin{array}{r} 63 \\ +38 \\ \hline 101 \end{array}$	$\begin{array}{r} 92 \\ -83 \\ \hline 09 \end{array}$	$\begin{array}{r} 52 \\ -16 \\ \hline 36 \end{array}$	$\begin{array}{r} 81 \\ -65 \\ \hline 16 \end{array}$	63
$\begin{array}{r} 15 \\ +39 \\ \hline 54 \end{array}$	$\begin{array}{r} 97 \\ -68 \\ \hline 29 \end{array}$	$\begin{array}{r} 80 \\ -11 \\ \hline 69 \end{array}$	$\begin{array}{r} 72 \\ -23 \\ \hline 49 \end{array}$	$\begin{array}{r} 18 \\ +84 \\ \hline 102 \end{array}$	$\begin{array}{r} 96 \\ -37 \\ \hline 59 \end{array}$	76

Double digit addition/subtraction (regrouping)

$$\begin{array}{r} 23 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} 90 \\ -53 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ +17 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ -46 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ +28 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ -25 \\ \hline \end{array}$$

$$\begin{array}{r} 59 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -46 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ +38 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ -83 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ -16 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -65 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ +39 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ -68 \\ \hline \end{array}$$

$$\begin{array}{r} 80 \\ -11 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ +84 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ -37 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ +34 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ -65 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ +84 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ -37 \\ \hline \end{array}$$

$$\begin{array}{r} 40 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} 79 \\ +19 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ -44 \\ \hline \end{array}$$

$$\begin{array}{r} 88 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} 52 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} 58 \\ +19 \\ \hline \end{array}$$

$$\begin{array}{r} 80 \\ -51 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \\ +16 \\ \hline \end{array}$$

$$\begin{array}{r} 84 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ -56 \\ \hline \end{array}$$

$$\begin{array}{r} 60 \\ -28 \\ \hline \end{array}$$

$$\begin{array}{r} 80 \\ -53 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ +17 \\ \hline \end{array}$$

$$\begin{array}{r} 90 \\ -49 \\ \hline \end{array}$$

$$\begin{array}{r} 88 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ -22 \\ \hline \end{array}$$

Double digit addition/subtraction (regrouping)

$\begin{array}{r} 23 \\ -15 \\ \hline 08 \end{array}$	$\begin{array}{r} 90 \\ -53 \\ \hline 37 \end{array}$	$\begin{array}{r} 83 \\ +17 \\ \hline 100 \end{array}$	$\begin{array}{r} 75 \\ -46 \\ \hline 29 \end{array}$	$\begin{array}{r} 17 \\ +28 \\ \hline 45 \end{array}$	$\begin{array}{r} 34 \\ -25 \\ \hline 09 \end{array}$	13
$\begin{array}{r} 59 \\ +23 \\ \hline 82 \end{array}$	$\begin{array}{r} 81 \\ -46 \\ \hline 35 \end{array}$	$\begin{array}{r} 63 \\ +38 \\ \hline 101 \end{array}$	$\begin{array}{r} 92 \\ -83 \\ \hline 09 \end{array}$	$\begin{array}{r} 22 \\ -16 \\ \hline 06 \end{array}$	$\begin{array}{r} 81 \\ -65 \\ \hline 16 \end{array}$	26
$\begin{array}{r} 15 \\ +39 \\ \hline 54 \end{array}$	$\begin{array}{r} 97 \\ -68 \\ \hline 29 \end{array}$	$\begin{array}{r} 80 \\ -11 \\ \hline 69 \end{array}$	$\begin{array}{r} 72 \\ -23 \\ \hline 49 \end{array}$	$\begin{array}{r} 18 \\ +84 \\ \hline 102 \end{array}$	$\begin{array}{r} 56 \\ -37 \\ \hline 19 \end{array}$	39
$\begin{array}{r} 17 \\ +34 \\ \hline 51 \end{array}$	$\begin{array}{r} 93 \\ -65 \\ \hline 28 \end{array}$	$\begin{array}{r} 81 \\ -19 \\ \hline 62 \end{array}$	$\begin{array}{r} 71 \\ -23 \\ \hline 48 \end{array}$	$\begin{array}{r} 17 \\ +84 \\ \hline 101 \end{array}$	$\begin{array}{r} 75 \\ -37 \\ \hline 38 \end{array}$	52
$\begin{array}{r} 40 \\ -19 \\ \hline 21 \end{array}$	$\begin{array}{r} 83 \\ -56 \\ \hline 27 \end{array}$	$\begin{array}{r} 79 \\ +19 \\ \hline 98 \end{array}$	$\begin{array}{r} 93 \\ -44 \\ \hline 49 \end{array}$	$\begin{array}{r} 88 \\ +23 \\ \hline 111 \end{array}$	$\begin{array}{r} 52 \\ -24 \\ \hline 28 \end{array}$	65
$\begin{array}{r} 58 \\ +19 \\ \hline 77 \end{array}$	$\begin{array}{r} 80 \\ -51 \\ \hline 29 \end{array}$	$\begin{array}{r} 66 \\ +16 \\ \hline 82 \end{array}$	$\begin{array}{r} 84 \\ -18 \\ \hline 66 \end{array}$	$\begin{array}{r} 67 \\ -19 \\ \hline 48 \end{array}$	$\begin{array}{r} 81 \\ -56 \\ \hline 25 \end{array}$	77
$\begin{array}{r} 60 \\ -28 \\ \hline 32 \end{array}$	$\begin{array}{r} 80 \\ -53 \\ \hline 27 \end{array}$	$\begin{array}{r} 73 \\ +17 \\ \hline 90 \end{array}$	$\begin{array}{r} 90 \\ -49 \\ \hline 41 \end{array}$	$\begin{array}{r} 88 \\ +23 \\ \hline 125 \end{array}$	$\begin{array}{r} 51 \\ -22 \\ \hline 29 \end{array}$	90

Double -digit multiplication

$$\begin{array}{r} 11 \\ \times 62 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ \times 43 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 15 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ \times 24 \\ \hline \end{array}$$

$$\begin{array}{r} 89 \\ \times 21 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ \times 57 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ \times 17 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 26 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 31 \\ \hline \end{array}$$

$$\begin{array}{r} 27 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ \times 44 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} 29 \\ \times 13 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 34 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ \times 10 \\ \hline \end{array}$$

11	31	54	34	
<u>x62</u>	<u>x43</u>	<u>x15</u>	<u>x24</u>	
22	93	270	136	
<u>660</u>	<u>1240</u>	<u>540</u>	<u>680</u>	
682	1333	810	816	36
89	99	87	42	
<u>x21</u>	<u>x57</u>	<u>x17</u>	<u>x10</u>	
89	693	609	00	
<u>1780</u>	<u>4950</u>	<u>870</u>	<u>420</u>	
1869	5643	1479	420	75
61	71	27	45	
x26	x31	x12	x44	
366	71	54	180	
<u>1220</u>	<u>2130</u>	<u>270</u>	<u>1800</u>	
1586	2201	324	1980	115
16	29	86	76	
<u>x23</u>	<u>x13</u>	<u>x34</u>	<u>x10</u>	
48	87	344	00	
<u>320</u>	<u>290</u>	<u>2580</u>	<u>760</u>	
368	377	2924	760	150

Double -digit multiplication

$$\begin{array}{r} 15 \\ \times 34 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ \times 65 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ \times 19 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 53 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 17 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 45 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 15 \\ \hline \end{array}$$

$$\begin{array}{r} 24 \\ \times 64 \\ \hline \end{array}$$

$$\begin{array}{r} 89 \\ \times 26 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ \times 31 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ \times 42 \\ \hline \end{array}$$

15	97	81	77	
<u>x34</u>	<u>x65</u>	<u>x11</u>	<u>x23</u>	
60	485	81	231	
<u>450</u>	<u>5820</u>	<u>810</u>	<u>1540</u>	
510	6305	891	1771	38
49	86	71	93	
<u>x19</u>	<u>x53</u>	<u>x17</u>	<u>x40</u>	
441	258	497	00	
<u>490</u>	<u>4300</u>	<u>710</u>	<u>3720</u>	
931	4558	1207	3720	78
11	61	54	24	
<u>x45</u>	<u>x40</u>	<u>x15</u>	<u>x64</u>	
55	00	270	96	
<u>440</u>	<u>2440</u>	<u>540</u>	<u>1440</u>	
495	2440	810	1536	115
89	99	87	44	
<u>x26</u>	<u>x31</u>	<u>x12</u>	<u>x42</u>	
534	99	174	88	
<u>1780</u>	<u>2970</u>	<u>870</u>	<u>1760</u>	
2314	3069	1044	1848	156

$$\begin{array}{r} 19 \\ \times 15 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ \times 53 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ \times 17 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 41 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ \times 33 \\ \hline \end{array}$$

$$\begin{array}{r} 94 \\ \times 83 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ \times 34 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ \times 65 \\ \hline \end{array}$$

$$\begin{array}{r} 81 \\ \times 11 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ \times 19 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ \times 53 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 17 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ \times 40 \\ \hline \end{array}$$

19	97	81	77	
<u>x15</u>	<u>x53</u>	<u>x17</u>	<u>x40</u>	
95	291	567	00	
<u>190</u>	<u>4850</u>	<u>810</u>	<u>3080</u>	39
285	5141	1377	3080	
54	86	64	94	
<u>x23</u>	<u>x41</u>	<u>x33</u>	<u>x83</u>	
162	86	192	282	
<u>1080</u>	<u>3440</u>	<u>1920</u>	<u>7520</u>	82
1242	3526	2112	7802	
15	97	81	77	
<u>x34</u>	<u>x65</u>	<u>x11</u>	<u>x23</u>	
60	485	81	231	
<u>450</u>	<u>5820</u>	<u>810</u>	<u>1540</u>	120
510	6305	891	1771	
49	86	71	93	
<u>x19</u>	<u>x53</u>	<u>x17</u>	<u>x40</u>	
441	258	497	00	
<u>490</u>	<u>4300</u>	<u>710</u>	<u>3720</u>	160
931	4558	1207	3720	