

Suggested Paper Color Code: **PINK**

Math Matters Code for Grade Band:  **Icon**

Summer Math Objectives: To review and reinforce the following Kindergarten skills

Major Works for Kindergarten: Addition and Subtraction concepts including **NY-K.OA.1:** Represent addition and subtraction using objects, fingers, pennies, drawings, sounds, acting out situations, verbal explanations, expressions, equations, or other strategies. **Note:** Drawings need not show details, but should show the mathematics in the problem.

Math Fluency for Kindergarten: NY-K.OA.5: Add and Subtract within 5

NY-K.CC.5a and 5b: Count to answer “how many” questions. As many as 20 things arranged in a line, circle or array. Up to 10 objects when scattered.

NY-K.CC.6: Compare two objects to see which one has “more of”/“less of” the measurable attribute. For example, longer/shorter; taller/shorter

New: NY-K.MD.4: Explore coins (pennies, nickels, dimes, and quarters) and begin identifying pennies and dimes.

NY Note: Beginning to identifying coins is new for Kindergarten under the NYS Next Generation Mathematics Learning Standards. Finding “fair shares” and “half” continues to be a Grade 1 skill in NY. Many

end-of-year Kindergarten students are ready to explore these concepts with food.

Educator Packet with English and Spanish (one per unit):

- **Target Number** directions and bull’s eye with numbers to select (*need a timer*)
- **Family Fun** Game Directions and Answer Key (manipulatives – 20 counters plus 1 dime and 10 pennies)
- **CGI** Directions and Word Problems for grade band (*English and Spanish*)
- **Snack Fraction** of the week directions (*need: paper plate, napkin, plastic knife, snack of the week or substitute*)

Student Packet with English and Spanish (one per unit):

- **Target Number** bull’s eye
- **Family Fun** cards for grade band
- **CGI** Word Problem Work Space
- **Snack Fraction** Record Sheet
- **Family Fun** Game Board and “DIY” Game Pieces

Printing Note: Use a different color to print the packets for each grade level. This makes it easier for students in different grade bands to work together. Packets can be printed two-sided.

Organization: Each Grade Band has the same four activities, organized in the same order, for each Unit. Students can do the same activity, but use the problems from their own packet.

In-Home Time Management: Students can work together on the Target Number and Family Fun Game. Students use the game cards from their separate Student Packets. The CGI word problems and Snack Fractions, however, often require more focused attention to the individual grade bands.

Summer School Time Management:

1. Warm up each day with Target Number.
2. Create a Daily Routine with the Family Fun game cards. Each row provides practice for different math skills. Select one card from each row. Pose the problems to students. Have the students fold paper into fourths, and then use each fourth to solve the problem and hold up for you to check. Use three to four each day. (Differentiate for students in different grade bands, so everyone is solving problems, but different problems.)
3. Use the full Cognitive Guided Instruction protocol for the CGI word problems, two times a week.

- a. All students work on the same problem.
 - b. Teacher walks between students, quietly asking individuals to explain the strategy/process they are using. This gives students a chance to self-correct.
 - c. When most are done, ask two to three volunteers to share their process. First, they draw on the board, and then they explain.
 - d. As the instructor, you are looking for students who use different strategies (i.e. drawing pictures, using tallies, adding on, etc.)
 - e. Eventually, use this time for a class discussion about strategies that take more time or less time.
4. Let students play the actual Family Fun game at least once a week.
 5. Utilize the extra teaching lessons posted on the website for this grade to fill gaps in learning.
 6. Summer School Instructors can bring in extra activities to support the student practice in their math fluency and major works.

GETTING STARTED:

Distribute Student Packets so each student receives the grade band for the grade they completed in June. The packets have a symbol instead of the grade number so Educators can differentiate the math level for students as appropriate.

WARM UP: TARGET NUMBER Directions

The Educator gives students one number. Students have one minutes to write down as many different ways to represent the number. Everyone takes turns sharing what he or she wrote.

Key Points:

- Students are able to write solutions from their own math knowledge.
- Educators can work in examples related to the student's required math fluency and major works in math.
- The goal is for students to find **multiple and different (correct) responses** rather than limiting students to one correct strategy.

Process:

1. Select a Target Number for today. Students can write the number on their Bull's Eye page.
 - a. All target numbers are fair to use with students in grades 1 through 8, but "Kinders" should use numbers 20 and under. All ages can start with the numbers 12 and 15. After these, you will need to give students in grades 1 to 8 the higher numbers, and use numbers under 20 for any "Kinders" in the group.
2. The task is to represent the target number in different ways in one minute. Do a couple samples with students before starting the timer.
3. Set the timer for one minute.
4. Educators play along, and write examples to share related to the students' required math fluencies:
5. At the end of the minute, students give ONE example at a time, going around the group a couple of times until all DIFFERENT responses are used. Students need to give **different** ways to represent the number. Writing, "7 + 3" is different from writing, "3 + 7". Drawing 7 circles and 3 circles is different from writing, "7 + 3."

Examples of some different ways to represent the number 10:

$7 + 3$

$10 + 0$

$17 - 7$

2×5

$100 / 10$

$20 / 2$

$3 + 7$

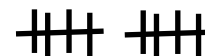
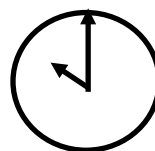
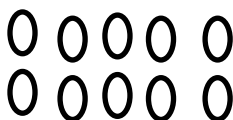
$0 + 10$

ten

5×2

$10 / 1$

10×1



One dozen eggs take away 2

$2 + 2 + 2 + 2 + 2$

$100 - 90$

FAMILY FUN GAME

All ages of students play the game together. On their turn, students use the game cards from their own packet to solve math problems at their own level.

Key Points:

- Unit 1 introduces the game and some of the Math Matters skills.
- Units 2 through 5 provide students practice all of the core math skills, except fractions, throughout the summer.

Process:

1. Each Student Packet has its own Family Fun Game Cards, allowing each student to participate together with students who have different skills to practice.
2. Do not cut the cards apart! Starting with Lesson 2, the three cards in each row will practice the same skill.
 - a. Many students will read ahead, solving problems, to find the “easiest” ones while waiting for their next turn.
3. Instead of students drawing a card, students select a problem from their packets. Students can select problems in the order they choose, BUT ask students to solve one problem from each row, before repeating from the row, so they practice each skill.
4. Game Directions are on the game board. Game boards are at the end of each Student Packet, so they are easy to pull off and use.
5. The best way to move around the board is to use dice. The Student Packets have a “Do It Yourself (DIY)” version to toss a small wad of paper onto a board of numbers.

CGI CHARTS

CGI is the **C**ognitive **G**uided **I**nstruction for primary students to solve math word problems. With a few changes, this chart is in New York State’s Next Generations Learning Standards for Pre-K to Grade 2, titled, “Common Addition and Subtraction Situations.” (*A copy of this chart is located at the end of this Educator Guide.*)

Key Points:

- NYS Next Generation Learning Standards include the same CGI Chart of word problems, with a few changes:
 - In the Educator Packets, the terms from the original (English) CGI Charts have been updated to represent the Next Generation terminology changes.
 - NYS Next Generation Learning Standards add a new category of word problems called, “Both Addends Unknown.” This new category has not been added to these summer math packets.
- The CGI process allows students to solve the problem in a way they understand, instead of the “right” way.
- Provides the Educator insight about the student’s math knowledge.
- Ask students explain their solution process before asking for the answer.
- When there is a group of peers, the emphasis is on finding different solution paths, rather than one correct method.
- Eventually this can lead to a real discussion: Does a student’s method work for him or her? Has the student seen another method they are ready to try?

Process:

1. Look for the word problem(s) on the chart with a STAR - ★
2. For “Kinders,” start with the “ADD TO - (Result Unknown)” and the “TAKE FROM - (Result Unknown)” word problems from the Unit’s CGI Chart.
 - a. If a student struggles, stick with these for the summer so the student becomes secure. Otherwise, you can proceed to the “PUT TOGETHER/TAKE APART – (Total Unknown)” word problems.
3. Have manipulatives and paper for students to choose either medium for solving the problem.
4. Read the problem to students once. **Note:** Each problem has three sets of numbers for you to choose from to fill in the blanks. Use the set that works best for the student(s).
5. Read the problem again, and then teach students to take notes.
 - a. Prompt students with questions, and model writing notes. (Kindergarten Students Packets have a mostly blank page called, “Word Problem Work Space,” to use for this.)

- b. What did Deena start with? *5 pennies*. How can we write? *D 5 (or draw 5 circles)*
 - c. What happens next? *She gets 3 more*. How can we write? *+3 (or draw 3 circles)*
 - d. What question do we have to answer? *How many does Deena have now?* How can we write this? *D has ___?*
6. Give students time to solve. (If struggling, prompt with, “What number does the problem start with?” Do you want to draw this or use manipulatives to recreate it?)
 7. Ask students to explain their process before asking them for an answer. This allows students time to self-correct and gives the Educator a clue about how the student is thinking.
 8. At the end, look at the final answer together, to decide if it solves the problem. How would you say the answer in a sentence? (“*Deena has 8 pennies now.*”)

Summer School Note: How to extend this to the full CGI process.

Walk around the group, quietly asking individuals to explain their process to you. When students seem stuck, prompt by re-asking them about their notes.

Take time to ask two to three volunteers to copy their process on a white board or large piece of construction paper. Then ask the students to explain their procedures. When selecting volunteers, it is a good idea to look for different strategies that are successful, not just the “best” method. The variety of examples and explanations will give all students a stronger understanding about math works.

Planning Note: Each CGI Chart uses characters and events from a particular book, listed at the top of the page. While the identified books relate to math topics, it is more efficient to focus reading materials to each student’s reading level, interests, and ELA needs.

SNACK FRACTIONS

Students separate a snack into a fractional portion. Then eat.

Key Points:

- Equal portions matter when sharing real food
- All students use the same snack food
- Using the record sheet helps students transfer from the real to the symbolic

The Math Matters In-Home curriculum uses the following snacks:

- Unit 1 = String Cheese
- Unit 2 = Cup of Trail Mix
- Unit 3 = 6 pieces Beef Jerky

- Unit 4 = 100 calorie snack bags
- Unit 5 = 4 Graham Crackers and Nutella

Planning Note: Substitute snacks as needed to travel in cars and to fit the budget. If possible, have the substitute snack match the shape or number of the original, so the Fraction Record sheet still makes sense. For example, substituting something rectangular, like a breakfast bar, for the string cheese, or substituting a package of six cheese cracker sandwiches for the 6 pieces of beef jerky.

The Math Matters Summer School curriculum suggested the following snacks:

- Unit 1 = Apple, ice cream sandwich, string cheese
- Unit 2 = Guacamole and carrots, trail mix, cherry tomatoes and cheese
- Unit 3 = Dill pickle, beef jerky, raisin bread and banana
- Unit 4 = Fruit kabob, 100 calorie snack bag, graham cracker and peanut butter (check for allergies to peanut butter)
- Unit 5 = Laughing Cow cheese wedges, graham crackers and Nutella and strawberries (check for allergies to Nutella), bagels and cream cheese
- Unit 6 = Turkey wrap, personal pan pizza

Process:

- **Use the *Snack Fraction guidance*** in the Teacher Packet and Snack Fraction Record sheet in the Student Packet

Alternative Process:

- **Single student:** splits the food in the fractional amount practicing (half, fourth, third, etc.) and Migrant Educator discusses with student – are they fair shares? Are some portions larger/smaller? Have the student draw and write the fractional portion of a whole.
- **Partners:** each has whole food. Each splits the food in the fractional amount practicing (half, fourth, third, etc.) but the partner picks the portion (half, $2/4$, $3/6$) first. Have the students draw and write the fractional portion of a whole.

Recipe Note:

Trail Mix: (mix equal parts of each of the following)

- Peanuts, M&M's, Fish crackers (check for allergies to peanuts); or
- Chex Corn Cereal, Cheerios, dried fruit

(Optional) SUMMER ASSESSMENTS

Formal Summer Assessments

The formal Summer Assessments are based on the grade that a student completed. A student who completed Kindergarten in June, but might be considered a (rising) First Grader in the summer, should take the Summer Assessments for Kindergarten. A rising Kindergartener would not be expected to take the pre- or post-tests, as the questions are based on end-of-year mastery to maintain core math skills over the summer.

Next Generation Alignment: These started as the Math Matters pre-tests and post-tests in English and Spanish. These are now modified to align with the *New York State Next Generation Mathematics Learning Standards*. For example, in the Kindergarten Assessments,

- The Math Matters objective to identify four coins (quarter, penny, nickel, and dime) has been modified to ask the student to identify two coins (penny and dime).
- The Math Matters objective to identify fair shares or one-half has been modified to an optional question, as mastery is not expected in Kindergarten.

Administration: The Educator has a script to read questions to the student. The Educator writes notes on the script as to how the student responds, and uses it to score individual students. (In a summer school setting, the Educator might want a separate class list to note how students respond and then score the results.

- Extra supplies needed per student taking the pre-test or post-test at one time:
 - Baggie with 15 lima beans; a baggie with 20 paper clips; linking cubes: 5 blue and 8 yellow; one penny and one dime.
 - A page with numbers cards is attached to each Educator Script. These need to be cut ahead of time.
 - The optional fraction question needs a real sandwich per student and cutting materials, or scissors to cut the paper sandwich attached to the script.

Informal Assessments

Educators can observe when a student is able to complete the problems or not. When gaps in knowledge are observed, Educators can re-teach to those skills, to close the gaps in learning. When a student can complete a skill on his or her own, it is important for the student to continue practicing the skill to avoid summer loss.

CLOSING THE GAPS

Use this section for ideas when a student struggles with a particular skill.

Get curious and ask yourself:

- *Is this a NYS skill for a student who just completed Kindergarten?*
- *Does the student just need a reminder and more practice?*
- *Did the student need a full lesson to re-introduce the skill?*
- *Does the student need to have both the English and Spanish packets to work with?*

You can follow up the next lesson:

- Plan to utilize your own examples during next week's "Target Number" to support this skill. At the beginning of Family Fun, use one of the game's examples to review the skill before playing the game.
- Review the Skill Lessons posted on the website for Kindergarten, to teach/ reteach the Summer Math skill for individual students.

Math Matters Note: These lessons were written for a classroom. These are called "TV Lessons" because the lessons were also scripts and videotaped during Math Matters. For example, each lesson has a part for a puppet named Azulito. You will need to preview so you can adapt the script to your students and situation.

Lessons Posted:

NY-K.CC.5 Count-Read Numbers and NY-K.MD.4 Identify Pennies

- Lesson references the story, [Deena's Lucky Penny](#)
- Supplies for Students to do Simple Counting
 - Print the "Pockets" board and "Pocket Change" cards
 - Thirty pennies and five nickels so the student has a choice
- Supplies for full lesson, adding the pockets of change together
 - Add the Pocket Change Record Sheet in English or Spanish

NY-K.OA.1-Represent Addition and Subtraction

- Lesson references the story, [A Desert Habitat](#)
- Supplies for Students
 - Print the Desert Story Board and the Desert Story Strategies pages
 - Twenty counters

NY-K.CC.6-Compare More of-Less of

- Lesson references the fable, “The Crow and the Pitcher,” from Aesop’s Fables
- Supplies for Students
 - Twenty Base Ten Units, or 20 Unifix/Linking Cubes (2 colors, ten each)
 - You will need to decide which pages will work the best

**NYS Next Generation Expectations for Kindergarten, Grade 1 and Grade 2
Common Addition and Subtraction Situations**

e.g., using objects or drawings to represent the problem

In the chart below, the four unshaded (white) subtypes are expectations in Kindergarten. Grade 1 and 2 students work with all subtypes. Darker shading indicates the four difficult subtypes that students should work with in Grade 1 but need not master until Grade 2.

		Result Unknown	Change Unknown	Start Unknown
Add To		A bunnies sat on the grass. B more bunnies hopped there. How many bunnies are on the grass now? $A + B = \square$	A bunnies were on the grass. Some more bunnies hopped there. Then there were C bunnies. How many bunnies hopped over to the first A bunnies? $A + \square = C$	Some bunnies were sitting on the grass. B more bunnies hopped there. Then there were C bunnies. How many bunnies were on the grass before? $\square + B = C$
	Take From	C apples were on the table. I ate B apples. How many apples are on the table now? $C - B = \square$	C apples were on the table. I ate some apples. Then there were A apples. How many apples did I eat? $C - \square = A$	Some apples were on the table. I ate B apples. Then there were A apples. How many apples were on the table before? $\square - B = A$
		Total Unknown	Both Addends Unknown	Addend Unknown
Put Together/ Take Apart		A red apples and B green apples are on the table. How many apples are on the table? $A + B = \square$	Grandma has C flowers. How many can she put in her red vase and how many in her blue vase? $C = \square + \square$	C apples are on the table. A are red and the rest are green. How many apples are green? $A + \square = C$ $C - A = \square$
	Compare	Difference Unknown “How many more?” version: Lucy has A apples. Julie has C apples. How many more apples does Julie have than Lucy? ----- “How many fewer?” version: Lucy has A apples. Julie has C apples. How many fewer apples does Lucy have than Julie? $A + \square = C$ $C - A = \square$	Bigger Unknown Version with “More”: Julie has B more apples than Lucy. Lucy has A apples. How many apples does Julie have? ----- Version with “Fewer”: Lucy has B fewer apples than Julie. Lucy has A apples. How many apples does Julie have? $A + B = \square$	Smaller Unknown Version with “More”: Julie has B more apples than Lucy. Julie has C apples. How many apples does Lucy have? ----- Version with “Fewer”: Lucy has B fewer apples than Julie. Julie has C apples. How many apples does Lucy have? $C - B = \square$ $\square + B = C$