Summer Math

Educator Packet

Unit 2

Warm up: Target Number

- The task is to represent the target number in different ways in one minute. Do a couple samples with students before starting the timer.
    a. Start all groups with the numbers 12 and 15.
        i. All target numbers are fair to use with students in grades 1 through 8.
        ii. Use numbers 20 and under for any "Cat-Icon" students in the group.
- Set the timer for one minute.
- Educators play along, and write examples to share related to the students' required math fluencies:
- 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 x 5	100 / 10	20/2
3 + 7	0 + 10	ten	5 x 2	10/1	10 x 1

●●●●●●●
○ ○○

0 0000 0
0 0000 0

One dozen eggs take away 2   2 + 2 + 2 + 2 + 2   100 - 90

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Required [Math] Fluencies

Kindergarten	Add and subtract within 5	*Procedural Fluency*: can easily use a process to figure out the answer (for example, using manipulatives, diagrams)
Grade 1	Add and subtract within 10	*Procedural Fluency*
Grade 2	Single digit sums and differences (automaticity by the end of Grade 2); Add and subtract within 100	*Automaticity* by the end of Grade 2: Knows the answer without stopping to use a process to figure out the answers.
Grade 3	Single digit products and quotients (product automaticity by the end of Grade 3)	*Automaticity for Products* by the end of Grade 3
	Add and subtract within 1,000	*Procedural Fluency*
Grade 4	Add and subtract within 1,000,000	*Procedural Fluency*
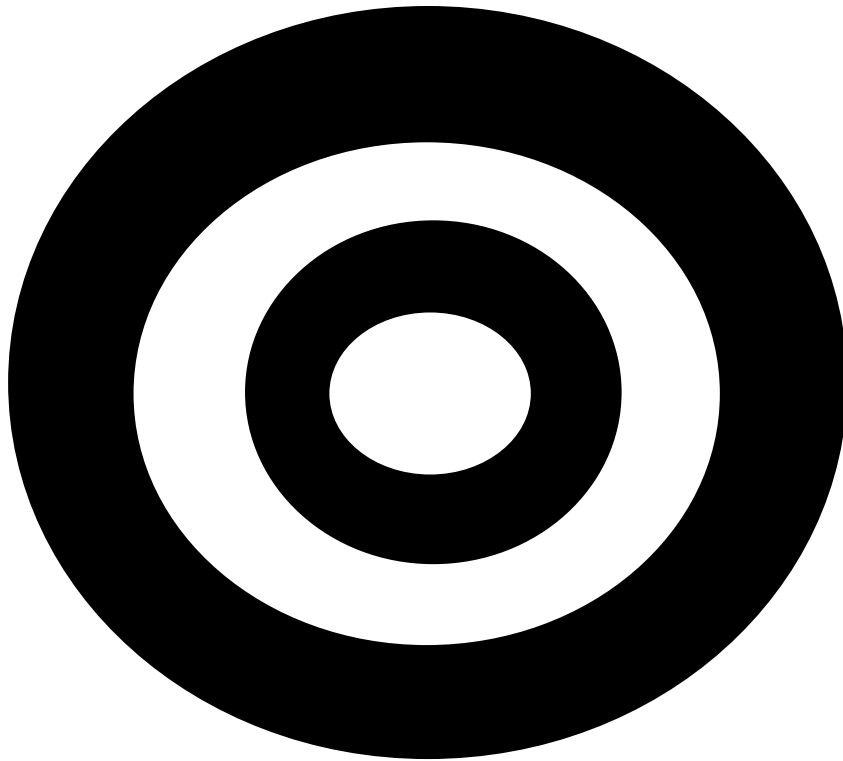
Target Number

Suggested Target Numbers: Start with 12 and 15 for everyone for the first two sessions. Afterwards, numbers over 20 are fair for all grade bands except for the DOG ICON, which should just use numbers under 20.

12	15	24	36
60	48	100	45
90	50	75	

More 🐕 choices: 9   18   6   20

FAMILY FUN GAME Directions

Key Points:

- Starting with Unit 2, the Family Fun Game gives students repeated practice in each of the Math Matters skills. This allows students to practice all of the skills throughout the summer.

Process:

1. Each Student Packet has its own Family Fun Game Cards, allowing each student to participate 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.
3. Instead of students drawing a card, students select a problem from their grade band sheets. 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.
6. Many students end up reading all of the problems in between turns as they search for the "best" ones to answer.

Do It Yourself (DIY) Game Pieces

Player: Cut the outside of the double trapezoid. Fold in half to make the player. If more than one student has the same color, students can write their names on the playing piece.

If you don't have a 6-sided die: Cut around the jagged "splotch" shape and wad the paper into a ball. Toss the ball onto the number board to find number of spaces to move.

Player Piece → | "Splotch" to make paper wad

Family Fun Game Pieces

1	2	3	4	5	6
6	5	4	3	2	1
4	5	6	1	2	3
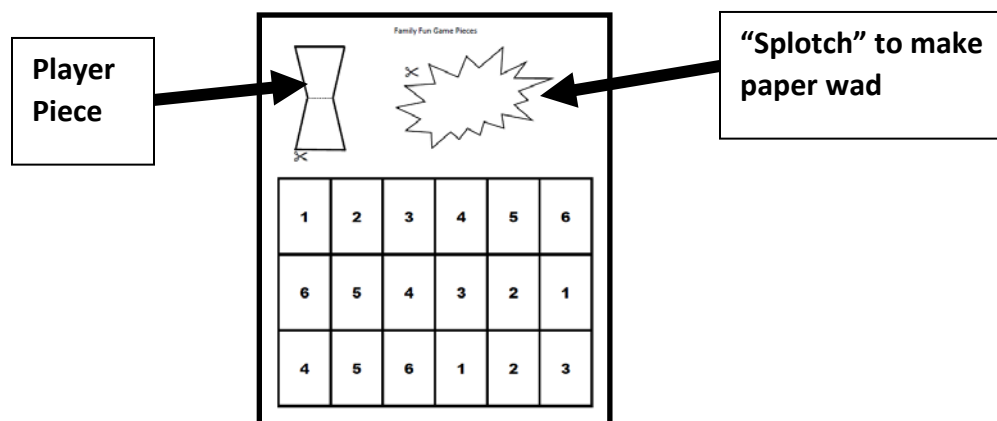
BLM Unit 2   Family Fun Game Answer Key - All Levels

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	10 ¢	$46	2 x 5 = 10 5 x 2 = 10 10 ÷ 2 = 5 10 ÷ 5 = 2	1.25	50% increase
B	10 ¢	$59	5 x 4 = 20; 20 ÷ 4 = 5	1.21	75% increase
C	12 ¢	$45	3 x 6 = 18; 18 ÷ 6 = 3	0.22	20% decrease
D	11 cents	$40	42	three-sixths or half	$\frac{8\ oz}{1\ c} = \frac{x\ oz}{3\ c}$
E	10 cents	$90	8	five-eighths	$\frac{16\ oz}{1\ lb} = \frac{x\ oz}{4\ lb}$
F	12 cents	$85	45	three-eighths	$\frac{36\ in}{1\ yd} = \frac{72\ in}{x\ yd}$
G	15 cents	$37	5 blouses	$108.55	$0.60 or 60¢
H	14 cents	$52	$4 each	6.4 miles	$1.75
I	18 cents	$26	4 in each row	50.2 miles	$0.90 or 90¢
J	6 + 4	2 + 7 = 9 7 + 2 = 9 9 − 2 = 7 9 − 7 = 2	0.76	9	$13.14
K	5 + 5	7 + 3 = 10 3 + 7 = 10 10 − 7 = 10 10 − 3 = 7	0.08	7	$18.90
L	1 + 9	6 + 9 = 15 9 + 6 = 15 15 − 9 = 6 15 − 6 = 9	0.19	9	$15.90
M	10, 20, 30, 40, 50, 60, 70, 80, 90, 100	22 perch	$\frac{9}{10}$	14	$2.59
N	9 ants	6 fish were left	6/10	42	$7.50
O	5 bugs	10 tadpoles left	4/10	16	$4.58
P	4 coyotes	8, 2 make 10	0.33 , 0.5	one-thrid	$1.64
Q	7 sage leaves	1, 9 make 10	11.99	three-sixths or half	$2.36
R	5 − 1 = 4	3, 7 make ten	Drew	five-eighths	$3.75

CGI CHARTS:

With a few changes, Math Matters' CGI Chart is in New York State's Next Generations Learning Standards for Grade 3 and Grade 4 for use with multiplication and division word problems involving Equal Groups and Arrays and Area Problems.

Key Points:
- Allows students to solve the problem in a way they understand, instead of the "right" way.
  - o **NY-3.OA.3 –** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
    - ▪ E.g., using drawings and equations with a symbol for the unknown number to represent the problem.
  - o **NY-4.NBT.5 –** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.
    - ▪ Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Process:
1. ***Pick one word problem.*** Spend time on the process instead of a quick answer.
   - o For Grade Band 3-4, the multiplication/division terms on the (English) CGI Chart have been updated to represent the Next Generation terminology changes.
     - ▪ The "Compare" row of addition/subtraction problems remains for use to practice addition and subtraction during the summer.
     - ▪ Use the STAR (Grade 3) ★ or the TRIANGLE (Grade 4) ▲ for types of word problems on the summer math assessments.
2. **Read the problem to students,** using the choice of differentiated numbers to fill in the blanks.
3. ***Read again and encourage students to take notes on the graphic organizer***. (modeling, teaching the first time)
4. ***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?)
   a. Have manipulatives and paper for students to choose either medium for solving the problem.
5. ***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.
6. ***At the end, look at the final answer together, to decide if it solves the problem***. How would you say this in a sentence?

Compare	*(Difference Unknown)* The tallest giraffe in the world, called George, was 19.7 feet tall. The average for giraffe height is 16.8 feet. How much taller was George than the average? *(These measures are true to the giraffe.)*	*(Bigger Unknown)* The giraffe's heart is very special because it has to pump blood up that very long neck. The average giraffe heart weighs 22 pounds. That is 21.5 pounds more than the average human heart. How much does the average human heart weigh? *(These measures are true to the giraffe.)*	*(Smaller Unknown)* A giraffe's tongue is very long so that it can reach and grab leaves from their favorite acacia tree. A human's tongue is about 4 inches long, which is about 14 inches shorter than the giraffe's. How long is the giraffe's tongue? *(These measures are true to the giraffe.)*
Equal Groups	**(Unknown Product)** ★ ▲ $a \times b = ?$ The Safari guide watched the birds for signs of weather change. He saw _____ flocks of birds, each of which had _____ birds. How many birds did he see? (5, 10) (5, 125) (12, 15)	**(Group Size Unknown)** $a \times ? = p$ and $p / a = ?$ ★ The Nature Preserve had _____ acres to parcel into _____ acre home sites. How many home sites could they create? (50, 5) (125, 25) (1000, 20)	**(Number of Groups Unknown)** $? \times b = p$ and $/ \backslash b = ?$ The Nature Preserve had _____ acres to share among _____ people for home sites. How many acres would each person receive if the shares are equal?

(35, 7) (150, 10)
(2500, 25)

Comparar	*(Diferencia desconocida)* La jirafa más alta del mundo, llamada George, tenía 19.7 pies de altura. El promedio de altura de las jirafas es 16.8 pies. ¿Cuánto más alta que el promedio era George? *(Estas son las medidas correctas para la jirafa.)*	*(Cantidad comparativa desconocida)* El corazón de la jirafa es bien especial porque tiene que bombear sangre hacia arriba a lo largo de todo ese cuello tan largo. El corazón de la jirafa promedio pesa 22 libras. Pesa 21.5 libras más que el corazón humano promedio. ¿Cuánto pesa el corazón humano promedio? *(Estas son las medidas correctas para la jirafa.)*	*(Referentedesconocido)* La lengua de la jirafa es bien larga para poder alcanzar y agarrar hojas del árbol de acacia, su favorito. La lengua humana mide alrededor de 4 pulgadas, 14 pulgadas más corta que la de la jirafa. ¿Cuánto mide de largo la lengua de la jirafa? *(Estas son las medidas correctas para la jirafa.)*
Agrupamiento y división	Multiplicación ★ ▲ El guía del safari observó a los pájaros para detectar señales de algún cambio en el tiempo. Vio _____ bandadas de pájaros, cada una de las cuales tenía _____ pájaros. ¿Cuántos pájaros vio? (5, 10) (5, 125) (12, 15)	División de medidas ★ La reverva natural tenía _____ acres para dividir entre lotes de _____ acres. ¿Cuántos lotes para casas pudieron crear? (50, 5) (125, 25) (1,000, 20)	División partitiva La reserva natural tenía _____ acres para compartir entre _____ personas para lotes de casas. ¿Cuántos acres recibiría cada persona si los lotes fueran iguales? (35, 7) (150, 10) (2500, 25)

Math Objectives	Unit 2, Lesson 2 3-4

Math Objectives
- Construct pictorial models of fractions.
- Compare fractional parts of a whole.
- Use fraction names and symbols to describe fractional parts of a whole.
- Use pictorial models to generate equivalent fractions.
- Compare fractions using pictorial models.

Language Objectives
- Discuss fraction comparisons.
- Discuss fraction equivalencies.
- Discuss fraction/decimal relationships.

Vocabulary
one-half
one-sixth
three-sixths
equivalent
greater than
less than

Materials:
1 per student
- **BLM** Trail Mix Fractions
- **BLM** Trail Mix Fraction Pieces

Per Partners:
- 2 cups Trail Mix (you may purchase already made, or have students mix their own with 1/2 of each of the following)
  - pecans
  - semi chocolate chips
  - granola
  - raisins
- two 1-cup measuring cups
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

Unit 2, Lesson 2

Snack Fractions

Children should wash their hands before this activity if using food items.

Snack Fractions
As part of each math day, please include a quick "Snack Fraction" activity. If your district/school does not allow any snacks to be given to students, please alter the activity by providing the paper shape to be divided into fractional parts.

Students share exactly as they did in Lesson 1, finding halves for themselves, then using the materials to find equivalencies for sixths. This time, though, have them find as many as they can using the sixths pictorial models before they glue them to the recording paper. *(3/6 = 1/2 ; 6/6 = 2/2)*

Work with each group as the need arises.

Snack Fraction Journal Writing: BLM Trail Mix Fractions
Prove with your snack sixth pictorial models that 4/6 = 2/3, and explain how you know.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.