Summer Math

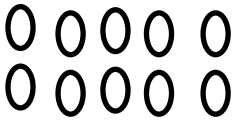
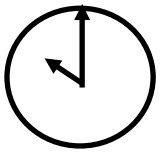
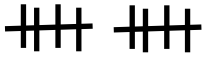
Educator Packet

Unit 4

Warm up: Target Number

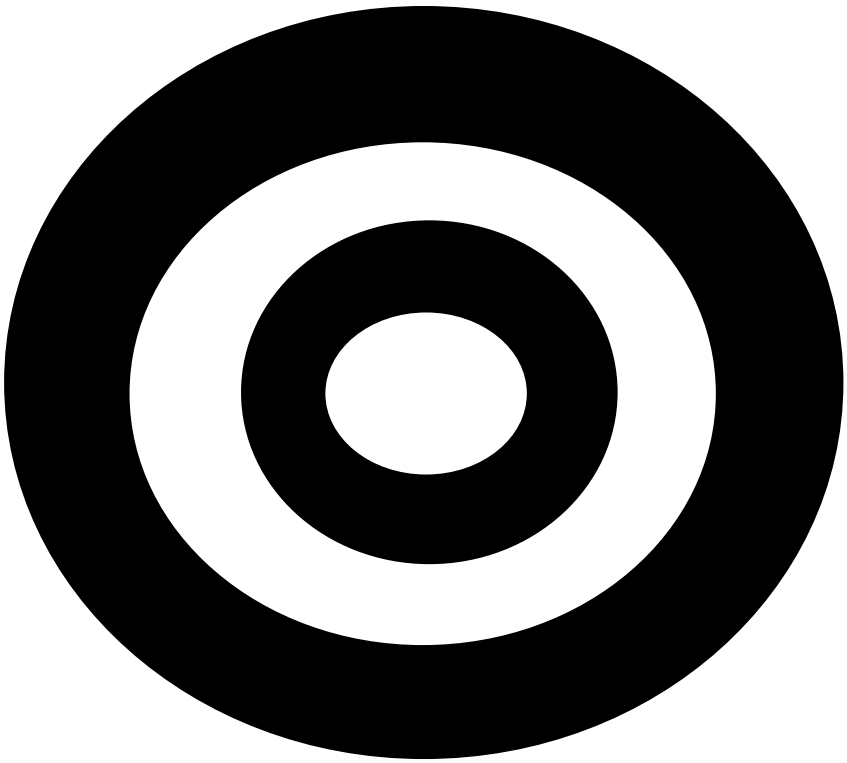
- The task is to represent the target number in different ways in one minute. Do a couple samples with students before starting the timer.
    a. Start all groups with the numbers 12 and 15.
        i. All target numbers are fair to use with students in grades 1 through 8.
        ii. Use numbers 20 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
					
One dozen eggs take away 2		2 + 2 + 2 + 2 + 2			100 - 90

Required [Math] Fluencies

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***
Grade 5	Multi digit multiplication	***Procedural Fluency***
Grade 6	Multi digit division; multi digit decimal operations	***Procedural Fluency***
Grade 7	Solve two step equations in the form of px + q = r and p(x +q) = r	***Procedural Fluency***
Grade 8	Solve simple 2 x 2 systems of equations by inspection/substitution	***Procedural Fluency***



Target Number

<u>Suggested Target Numbers</u>: 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.

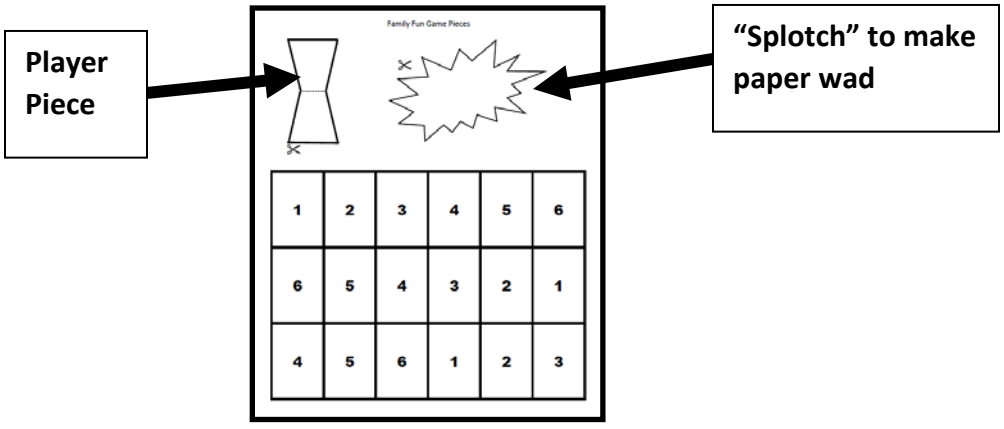
Process:

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.



BLM Unit 4, Follow-Up Lesson 3 Family Fun Game All Level Answer Key

Problem Letter	Kinder (pink)	1-2 (blue)	3-4 (green)	5-6 (yellow)	7-8 (peach)
A	14 ants	8 + 7 = 15 7 + 8 = 15 15 – 7 = 8 15 – 8 = 7	0.8	$6\frac{1}{4}$ or 6.25	3
B	4 eggs	5 + 7 = 12 7 + 5 = 12 12 -7 = 5 12 – 5 = 7	0.80	$\frac{5}{8}$ or 0.625 cups	6
C	7 brown	8 + 9 = 17 9 + 8 = 17 17 – 9 = 8 17 – 8 = 9	0.08	$423,294,920.10	4
D	Shows 10 counters Number 10	38	8	2134.448	scale factor 3
E	Shows 15 counters Number 15	23	63	$7400 down	scale factor 3
F	Shows 12 counters Number 12	38	49	10% water	fifth term 20
G	Penny	17	156 flowers	$48.50 tax	Length: 3078 mm Width: 1368 mm
H	Penny	4, 6 make ten	5 eggs	$33 late fee	Height: 0.64 feet
I	Dime	3,7 make ten	21 pounds	$375 earned	2.56 inches
J	2 pieces are the same size, fair	Path B is longer.	$4\frac{3}{4}$	$39.64	20 total candies
K	Cuts card in 2 equal pieces	Path A is shorter	$9\frac{1}{3}$	$12.20 tip	$157.50 total bill
L	Halves OR 1 out of 2 equal pieces	A is shorter than B. B is longer than A.	$99\frac{2}{4}$	25% tip	99 total chickens
M	13 drops of water	49 jelly beans	The 4 facts for 8x4=32	no. labels flipped	$57 sales price
N	3 thorns	35 fewer	The 4 facts for 6x9=54	yes. scale factor of (x6)	$31.25 sales price
O	10 miles	52 miles	7x8=56 8x7=56 56/7 = 8 56/8=7	60 students:1 bus	120 cookies
P	Set of 5 counters Set of 8 counters Mouse (8) had more	18 more	Equivalent to 1/3 can be 2/6 or 3/9 or 4/12....	30 notes hit	66 or 67 cents
Q	Set of 12 counters Set of 11 counters Lion (12) saw more	31 bananas	Equivalent to 1/2 can be 2/4 or 3/6 or 4/8....	$\frac{17}{12}$ or $1\frac{5}{12}$	$37.89 total cost
R	Set of 12 counters Set of 13 counters Mouse (13) saw more more	28 times	Equivalent to 1/4 can be 2/8 or 3/12 or 4/16....	$4\frac{1}{8}$	3 hours

CGI CHARTS:

While the New York State's Next Generations Learning Standards for Grade 5 and Grade 6 do not have a chart of sample word problems, the CGI Chart for Grades 5 and 6 give the students practice multiplying with fractions and decimals. Additionally, the CGI process supports students in reading and solving word problems.

Process:

1. ***Pick one word problem.*** Spend time on the process instead of a quick answer.
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?

	Unknown Product a x b = ?	**Group Size Unknown** a x ? = p and p ÷ a = ?	**Number of Groups Unknown** ? x b = p and p ÷ b = ?
Equal Groups	Crow was meticulous. He gathered his pebbles into ___ piles. He put ___ pebbles in each pile. How many pebbles did crow gather in all? 6, 7 5, 6 7,8	Crow was meticulous. He gathered ___ pebbles. He put ___ pebbles in each pile. How many piles did he have? 49, 7 64, 8 110, 11	Crow was meticulous. He gathered ___ pebbles. He put them into ___ piles so that there was the same amount in each pile. How many pebbles in each pile? 36, 4 42, 6 72, 8
Rate	Tortoise walks at a rate of 0.27 km/h. How far can he walk in 4 hours?	Tortoise walks at a rate of 0.27 km/h. How many hours will it take to walk 1 km?	Tortoise walked 0.15 km in 30 minutes. If he walked the same speed the whole way, how far did he walk in 20 minutes?
Price	The golden eggs the goose laid were worth $642. 75 each. If the goose lays 7 eggs in a week, how much money does its owner make in one week? How much in one month? How much in one year?	The golden eggs are worth $1532 per ounce. How many ounces could be purchased for $12,656?	The goose laid 14 golden eggs for a total value of $21,488. How much was each egg worth?
Fractions	$\frac{3}{4}$ of a cup of pebbles will raise the water level in the pitcher by $\frac{1}{2}$ an inch. How many cups of pebbles will it take to raise the water level 7 inches?	The crow dropped enough pebbles in the pitcher to raise the water 6 inches. If it takes 2/3 of a cup of pebbles to raise the water 1 inch, how many cups of pebbles did the crow drop in?	Crow dropped 7-3/4 cups of pebbles into the pitcher. If the water raised 8 inches, how many cups of pebbles does it take to raise the water one inch?

CGI Problems for Unit 4

	Multiplicación	División de medidas	División partitiva
Formación de grupos y Partición	El cuervo era meticuloso. Ordenó sus piedras en ___ pilas. Puso ___ piedras en cada pila. ¿Cuántas piedras juntó el cuervo en total? 6, 7 5,6 7,8	El cuervo era meticuloso. Juntó ___ piedras. Puso ___ piedras en cada pila. ¿Cuántas pilas tenía? 49, 7 64, 8 110, 11	El cuervo era meticuloso. Juntó ___ piedras. Las puso en ___ pilas para que hubiera la misma cantidad en cada pila. ¿Cuántas piedras había en cada pila? 36, 4 42, 6 72, 8
Velocidad	La tortuga camina a una velocidad de 0.27 km/h. ¿Qué distancia puede recorrer en 4 horas?	La tortuga camina a una velocidad de 0.27 km/h. ¿Cuántas horas le llevará caminar 1 km?	La tortuga caminó 0.15 km en 30 minutos. Si caminó a la misma velocidad en todo el recorrido, ¿cuánto recorrió en 20 minutos?
Precio	Los huevos dorados que puso la gansa tenían un valor de $642. 75 cada uno. Si la gansa puso 7 huevos en una semana, ¿cuánto dinero ganó su dueño en una semana? ¿Cuánto ganó en un mes? ¿Cuánto ganó en un año?	Los huevos dorados valen $1532 por onza. ¿Cuántas onzas se podrían comprar con $12, 656?	La gansa puso 14 huevos dorados por un valor total de $21, 488. ¿Cuánto valía cada huevo?
Fracciones	$\frac{3}{4}$ de una taza de piedras elevaría el nivel del agua en el jarro en $\frac{1}{2}$ pulgada. ¿Cuántas tazas de piedras se necesitarían para elevar el nivel del agua en 7 pulgadas?	El cuervo dejó caer suficientes piedras en el jarro para subir el nivel del agua en 6 pulgadas. Si se necesitan 2/3 de una taza de piedras para elevar el nivel del agua en 1 pulgada, ¿cuántas tazas de piedras dejó caer el cuervo en ella?	El cuervo dejó caer 7-3/4 tazas de piedras en el jarro. Si el agua se elevó 8 pulgadas, ¿cuántas tazas de piedras se necesitarían para elevar el nivel del agua en 1 pulgada?

Materials
- balance (no weights necessary)
- 2 100-calorie snack packs (heaviest weight possible)
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair
- **BLM** 100-Calorie Snack Packs-Snack Fractions
- **BLM** 100-Calorie Snack Packs-Snack Fractions Teacher Guide

Math Vocabulary
unlike denominators
like denominators
unit price
ratio
proportion
percent
greatest common factor
least common multiple

Literature Vocabulary
moral
trait
patient
impatient
greedy
generous
adventurous
cautious

Teacher Note
Each pair of students MUST have the same 100-calorie snack weight. In other words, if partner A has a snack that weighs 1.03oz, partner B must have a snack that weighs 1.03oz.

It is okay for a group to have a different snack or weight than another group.

Unit 4, Lesson 2 — Grades 5-6

Snack Fractions

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

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activity in this unit is different than any other students have completed up to this point. The 100-calorie snack packs are packaged according to weight as opposed to quantity. The lesson will continue to focus on combining and separating fractional parts as well as dividing into fourths, but based on the weight of the snack, not the quantity of the snack in the package. It will be easier for students to find weight measurements with the heaviest snack pack you can find. A Teacher Guide for the BLM is provided.

Be explicit that this is a SET model where the whole is defined as TWO snack packs, not one. Same concept as the Beef Jerky activity.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack! *(If today's portion is too small, you may give them an additional pickle to eat.)*

Snack Fraction Journal Writing: BLM Fruit Kabob-Snack Fractions
Justify how it is possible for 12 meats out of 40 ingredients to be more than 50% of the ingredients.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 2 – Snack Fractions
One per student

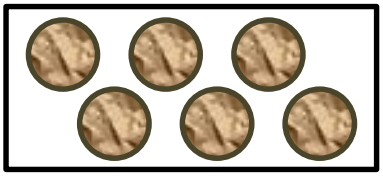
100-Calorie Snack Packs – Snack Fractions Teacher Guide

Some answers will vary based on the weight of the snack students are given. This key will use the snack pack with three mini cakes and a weight of 1.125 oz (or 32 grams) as an example.

1. Draw a pictorial representation of the whole in the space provided. Set Model – students must define the whole by circling or boxing the snack pieces. This is NOT six separate wholes.

   fraction $\frac{6}{6}$ weight 1.125 oz or 32 grams

PICTURE



Calibrate and use the balance to help answer the following questions. Divide the snack equally between you and your partner.

2. In relation to the original whole unit, your new portion is represented by:

   fraction $\frac{3}{6}$ or $\frac{1}{2}$ decimal 0.5

   percent 50% weight 0.56 oz or 16 grams **approximate*

3. Do you and your partner each have exactly half of the whole snack? Justify.
   Yes. We compared their weights on the balance and they equaled each other or leveled out.

4. A friend wants to share your portion. By weight, how would you make sure you both have an equal amount? Do so. Estimate half of my portion, then use the balance to make them exactly equal.

5. In relation to the original whole unit, your new portion is represented by:

   fraction $\frac{1}{4}$ decimal 0.25

   percent 25% weight 0.28 oz or 8 grams **approximate*

6. Your partner also had to share their snack with a friend. Write the equation you would use to find the fractional representation of your portion, your friend's portion, and your partner's portion combined.
   Find the total of the three portions. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$

7. Explain how using weight to divide something equally may be more accurate than using the method of quantity (counting pieces). Draw a picture to justify your reasoning. Dividing by quantity only works when all of the pieces are the same size. Portions can have the same weight even if the pieces of the portion are different sizes or quantities are different.