Beecher Road School

Summer Math Packet

For

Students Entering Fourth Grade

Dear Fourth Grader,

Congratulations on successfully completing third grade! In order to help you maintain all the great strategies, skills, and concepts you learned this year and to be ready for fourth grade, we hope you complete the attached summer packet. The packet has two calendar pages, one for July and one for August. It also includes directions for math games to be played at home as well as cool math books we recommend. We'd like you to try to spend at at least ten minutes each day this summer, 4 – 5 days a week, working on the attached problems, reading some of the suggested math books, visiting the websites, or practicing your math facts.

Just a few minutes each day spent "thinking and talking math" will help reinforce the math that you have learned and begin to prepare you for all the new concepts you will learn in fourth grade. The goal of this packet is for you to have fun while you keep your math skills and concepts fresh. Remember to communicate your mathematical thinking by discussing how you approached a problem, what strategies you used and why, and how you know your solution makes sense.

When you have completed the packet, please sign your name on the slip at the bottom of this paper and ask your parent to sign it, too. Please return the slip to your fourth grade teacher in August.

Have a safe and happy summer vacation!

_____

Date

I, _____, spent at least 200 minutes working on math activities this summer.

_____ _____

Student Signature Parent Signature

Grade 4 SUMMER Math Ideas

Math Books To Read:
The Best of Times by Greg Tang
Fraction Fun by David Adler
The $1.00 Word Riddle Book by Marilyn Burns
Math for All Seasons by Greg Tang
Pigs will be Pigs: Fun with Math Money by Amy Axelro

Books About Perseverance and Mindset:
The Girl Who Never Made Mistakes by Mark Pett and Gary Rubinstein
Making a Splash by Carol E. Reiley
The Most Magnificent Thing by Ashley Spires
Giraffes Can't Dance by Giles Andreae
Your Fantastic Elastic Brain by JoAnn Deak

Games To Play:

1. Multiplication War

Use a deck of cards, face cards equal 10, aces equal 1. Deal out all the cards equally between 2 or 3 players. Each player turns over 2 cards and multiplies the numbers together. The person with the higher product wins the pile of cards. If you have the same product, repeat the procedure. Winner takes all the cards.

2. Close to 1,000

Use a deck of cards, with the face cards removed. Treat the ace as the number 1. Deal 8 cards to each player. Use any 6 of your cards to make two 3-digit numbers. Try to get a sum that is close to or equal to 1,000. Write these two numbers on a piece of paper. Your score is the difference between your number and 1,000.

Example: Your eight cards are 1, 5, 4, 3, 1, 8, 3, 8.

You can combine 148 + 853= 1,001. Your score is 1 since the difference between 1,001 and 1,000 is 1. Discard the 6 used cards and pick 6 new cards. Whoever has the lowest total score after 5 rounds wins the game.

3. Salute the General

Materials

Deck of Cards

Number of Players

3 players

- One General
- Two Captains

Object of the Game

Object is to collect the most cards.

Description

Ace is worth 1

Number cards are worth their value.

Face cards are worth 10.

General shuffles cards. The General gives one card to each of the Captains. The Captains may not look at their cards.

When the General says, "Salute the General," both Captains raise the card to their forehead with the card is facing the other players.

The cardholder cannot see his/her own card.

The General then adds the two numbers and announces the sum.

The Captains then try to mentally figure out what number is on their card, and call it out.

If they are correct the Captains keep the cards. If they are not correct they give the card to the General.

To help build a repertoire of strategies, the General can asks: How do you know? The Captains can share their strategy for finding the sum.

Modifications
The same game can be played by multiplying the numbers and calling out the product. Decks can be "stacked" with cards that focus specific facts or strategies to be reinforced for the math level of the players.
Change the value of the face cards
J = 11, Q = 12, K = 13, or
J = 20, Q = 25, K = 50, or
J = 15, Q = 20, K = 25

4. Race to Zero
Materials
1 die (or a 1-6 spinner, six numbers written on pieces of paper to draw from in a bag,…)
Paper and pencil
Create a record sheet by writing 100 at the top of the sheet.
Number of Players
2 to 6 players or teams
Object of the Game
The player who is closest to Zero without going below wins.
Description
Player 1 rolls the die and decides whether subtract the number rolled or 10 times the number numbered. For example, if the player rolls a 6 the player can choose to subtract a 6 or 60. The play goes to the next player. Each player must take 6 turns and get as close to the target amount of zero as possible. A player records each number rolled and subtracts it from the remainder of previous turn. The player closest to zero without going below zero is the winner. If a player goes below zero, the player is out.

Modifications
Change the starting quantity to a smaller or larger number.
Start with 10 dimes and make change with pennies to model the subtraction
Change to addition by playing Race to 100.
Use a deck of cards instead and create a value for face cards
Use a pair of dice and subtract the total of rolled.

5. Renaming Battle

You'll need: A deck of renaming battle cards
Players: One or two other people
Goal: To get the most cards
How to play:

- Mix up the cards. Deal out all the cards.
- Keep your cards in a pile face down in front of you.
- Turn over your top card and put it face up in the center of the table. Say the 2 digit number. For example, if your card says 5 Tens and 18 Ones you would say, "68."
- Each of the other players does the same thing.
- When each person has a card face up in the center, compare the numbers. The person who put down the highest card gets all the cards and places them on the table beside him or her. This becomes his or her pile of winning cards.
- If two cards stand for the same number, and are the highest number cards, then there is a "Battle.
- The players who laid down those cards lay down two more cards in the center of the table face down. Then they lay down a card, face up. They say the number and compare them. The person with the highest card gets all the cards in the center of the table.
- When you have used up your original pile of cards, count the cards in your winning pile. The person with the most, starts the next game.

Renaming Battle Cards

57	60	36	55
5 tens + 7 one	6 tens + 0 ones	3 tens + 6 ones	5 tens + 5 ones
5 tens + 17 ones	5 tens + 10 ones	3 tens + 16 ones	4 tens + 15 ones
1 ten + 26 ones	3 tens + 25 ones	3 tens + 27 ones	4 tens + 20 ones

52	70	67	92
5 tens + 2 ones	7 tens + 0 ones	6 tens + 7 ones	9 tens + 2 ones
4 tens + 12 ones	6 tens +10 ones	5 tens + 17 ones	8 tens + 22 ones
3 tens + 22 ones	5 tens + 20 ones	4 tens + 27 ones	7 tens + 32 ones

17	2 tens + 5 ones	6 tens + 4 ones	81
1 ten + 7 one	1 ten + 15 ones	5 tens + 14 ones	8 tens + 1 one
0 tens + 17 ones	0 tens + 25 ones	4 tens + 24 ones	7 tens + 11 ones
25	64	3 tens + 34 ones	6 tens + 21 ones

23	48	66	83
8 tens + 11 one	6 tens + 23 ones	2 tens + 3 ones	4 tens + 8 ones
8 tens + 3 ones	6 tens + 6 ones	1 ten + 13 ones	3 tens + 18 ones
7 ten + 13 ones	5 tens + 16 ones	0 tens + 23 ones	2 tens + 28 ones

79	14	53	91
45	6 tens + 19 ones	0 tens + 14 ones	2 tens + 33 ones
4 tens + 5 ones	5 tens + 29 ones	5 tens + 3 ones	9 tens + 1 one
3 tens + 15 ones	7 tens + 9 ones	1 ten + 4 ones	4 tens + 13 ones

61	48	99	39
4 tens + 8 ones	9 tens + 9 ones	3 tens + 9 ones	6 tens + 1 one
5 tens + 11 ones	3 tens +18 ones	8 tens + 19 ones	2 tens + 19 ones
4 tens + 21 ones	2 tens + 28 ones	7 tens + 29 ones	1 ten + 29 ones

Multiplication Dice Game

Player 1 rolls two dice. He or she multiplies the number together to find the product. Player 2 does the same. Circle the math fact with the highest total. The player who had the highest total wins the round. Play all 11 rounds.

Player 1:_____	Player 2:_____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____
____ X _____ = _____	____ X _____ = _____

Target 300

Materials
1 die (or a 1-6 spinner, six numbers to draw from in a bag,...)
Paper and pencil
Create a record sheet by drawing a line down the center of the paper and label the top of each column with player 1 and player 2. See Diagram 1.

Diagram 1

Number of Players
2

Object of the Game
The player who is closest to 300 wins.

Description
Player 1 rolls the die and decides whether to multiply the number rolled by 10, 20, 30, 40, or 50. Each player must take 6 turns and get as close to the target number of 300 as possible. Both players write the multiplication sentence for the first player's choice and product. Example: Player 1 rolls a 3 and player 1 chooses to multiply it by 20, both players write: **3 x 20 = 60** under first player's column. Then it is the second player's turn. Each player keeps a running total by adding the new product to the score of the previous turn. After six turns each the player determines the difference between their total and three hundred. The player's compare their scores to see who was closest to 300. Players are allowed to exceed 300. The player with a score closest to 300, wins.

Modifications
Change the target number to 500 and increase the number of turns to 8.
Change the target number to 10,000 and multiply the number on the die by 10, 100, or 1,000

Entering 4th Grade
July

Glen, Harry and Kim each have a different favorite sport among tennis, baseball and soccer. Glen does not like baseball or soccer. Harry does not like baseball. Name the favorite sport of each person.	I am a number between 20 and 30. When you divide me into 6 equal groups, there is an even number in each group and 2 are left over. What number am I? Write your own division riddle.	Read *Fraction Fun* by David Adler. Which is larger, 2/3 or 3/4? How do you know? Prove it.	Family Math Activity: Renaming Battle	Family Math Activity: Play the game Close to 1,000 (see directions)
Vanessa had 12 stamps. First she gave her sister half of the stamps and then she used three to mail letters. How many stamps does Vanessa have left?	Mark earned 9 stickers in class last week. Karen earned twice as many. How many stickers did they earn together?	Ron has 60 marbles. He gives half of them to Don. Don gives half of those marbles to Tom. How many marbles did Don give to Tom?	Read *The Best of Times* by Greg Tang. Make a set of flashcards and practice multiplication facts.	Family Math Activity: Play Monopoly. Did you use a strategy? What was it?
I have exactly ten coins whose value is $1.00. If three of the coins are quarters, what are the remaining coins?	What time did the sun rise? What time did the sun set? How many hours between the sunrise and sunset? Choose another activity you do and record the start and end time. Find the elapsed time.	Is $\frac{7}{8}$ closer to $\frac{1}{2}$ or one whole? How do you know?	Figure out your age in months. How many months old are you?	Family Math Activity: Play Salute the General. Ask, "How do you know?" as you play. Justify your thinking!
Write a story problem that can be solved using the number sentence 9 x 3 = _____	Arrange the fractions in order, beginning with the least. Explain your answer with a picture. 1/5, 1/7, 1/3	Jack is thinking of a number. It is less than 20 and more than 16. When you count by 3's you say the number. What number is Jack thinking of?	Read *Pigs will be Pigs: Fun with Math and Money* by Amy Axelrod. Get a menu from a restaurant and add up what it would cost for your family to eat there.	Family Math Activity: Play Race to Zero. Did you use a particular strategy to help you get to 0?

Entering 4th Grade
August

Draw a picture of a quadrilateral. Draw a picture of a rhombus. How are they alike? How are they different?	Family Math Activity: Play Renaming Battle	A room has 6 tables. Each table has either 4 or 5 chairs. There are 28 chairs in the room. How many tables have 5 chairs?	Estimate how long it will take you to do 100 jumping jacks. Did it take more or less than 5 minutes? Record your time and compare with a friend.	Family Math Activity: Play Target 300.
Carl made a tower with 4 blocks. The red block is not on the bottom. The blue block is not on the top. The green block is under the red block. The yellow block is on top of the blue block and under the green block. The _____ block is on top.	Roll 2 dice and multiply to find the product. Record the product. Do this 25 times. Create a bar graph with the results. What do you notice?	Find a newspaper and cut 5 articles or pictures out. Use a ruler to measure the length and width of each article or picture. Find the area, then organize them by area from least to greatest.	Draw a 6 inch number line that begins with 0 and ends with 1. Roll a die. Divide your number line into this number of equal segments. Label the segments. Explain your thinking.	Family Math Activity: Play Mancala or Checkers. What strategy did you use to play?
Write a story problem that can be solved using the number sentence $24 \div 6 =$ _____	Select ten items from a grocery flyer and find the total cost of the items. Calculate how much change you would receive from a one hundred dollar bill.	A farmer has chickens and cows. What combination of animals could total 24 legs? Is there more than one combination?	When rounding to the nearest hundred, what is the smallest whole number that will round to 500? The largest? How many different whole numbers will round to 500?	Family Math Activity: Play Multiplication Dice Game

Optional Weekly Activities

Activity One: A Family Outing

Your parents have asked you to research and compare the cost of different family outings so that you can recommend one that will be fun, but doesn't cost too much. Research the costs involved in all the members of your immediate family visiting the following places on a Saturday afternoon: an ice skating rink, a museum, an amusement park, the zoo, or a movie theater. You may use the newspaper or the Internet to get your information. Then present your recommendation to your parents. Make sure you include a breakdown of the entrance costs for your family for each of the places you researched, and be sure to explain why this outing would make the best choice!

Activity Two: Designing a Town Map

For this project you will create a map of an imaginary town that includes different kinds of lines, angles and shapes. Your map must include the following:

- The town map
- A map scale
- At least two sets of streets that are parallel
- At least two sets of streets that are perpendicular
- At least two streets that intersect another to form a right angle
- Eight different 2-dimensional shapes to represent buildings or local attractions (e.g. park, movie theater, pool)
- Names for each street/building/local attraction

Bonus: Write out three sets of clear directions to get from one location to another in your town.

Activity Three: Design a Math Game

You are a board game designer! You are creating a game for your classmates to play. Your game can focus on any mathematical concepts you have learned (e.g. geometry, number sense, addition, subtraction, multiplication or division). Make sure that you provide clear directions so players will understand how to play your game. Make an answer key to go with your game (if needed). Write a brief description explaining how this game can help students improve their math skills and understandings.

Activity Four: Tallest Buildings of the World

In this project you will research some of the world's tallest buildings and the population of the cities where they are located. Round all measurements to the nearest whole number. Use the library or internet to research the names of 4-5 of the tallest buildings in the world and mark their locations on a map. Record the year each building was constructed and three other interesting facts about it. Compare and order the populations of the cities where each building is located. Does the city with the tallest building have the largest population? Create a bar graph to compare the height of the buildings. Be sure to include a title and labels!

Optional Weekly Activities
Activity Five: A Class Pet Your teacher is considering getting a class pet and has asked you to research how much it would cost to feed a hamster, a snake or a leopard gecko per year. Display your data about the costs to feed each pet in a bar graph. Be sure to include a title and labels! Write a recommendation to your teacher based on your data. Write a paragraph explaining how you collected your data and the math you used in completing the project.
Activity Six: Planning a Birthday Party Your mom and dad said that you can help plan your birthday party! YAY! You are to pick the theme of the party and make a list of all the items that you will need: tablecloth, goody bags, goody bag items, cups, plates, forks, balloons, and of course, the cake. You may use the Internet for your research or look at fliers or catalogs. You might even want to visit Party City or other places to find out how much it would cost to have a party if you invited ten friends. Share the list and the expenses with your parents.
Activity Seven: Split the Bill You visit a new restaurant for dinner with three of your friends. After a delicious meal, the waiter hands you the check so that you can split the bill equally with your friends. For the project: decide on the type of restaurant you will visit. Create a restaurant menu that shows the price for five different drinks, entrees, side dishes and desserts. Create a guest check that shows what each person ordered, the cost of each item and the total cost of the meal. Split the bill equally with your friends. How much money does each person need to pay? Explain your thinking. Think of a creative way to share your work!
Activity Eight: Create a Math Storybook In this project you can choose to create a math storybook for the local library or the school library. Requirements: Choose a math topic and decide on a title for your book (e.g. A Day without Measurements, The Land of Quadrilaterals, Fraction Frenzy etc.) Create your main characters and supporting characters. Write a draft copy of an original math story. When you are ready to publish: design a cover that includes the title, author and an illustration. Write a blurb on the back cover that explains how your book will help the reader learn more about math, and suggest what grade level it is best suited to. Type or neatly print your story. Include at least one illustration in your story.